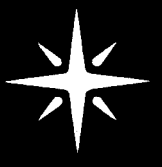
SERVICE MANUAL

SD565



marantz®

model SD565

Stereo Cassette Deck

MARANTZ DESIGN AND SERVICE

Using superior design and selected high grade components, MARANTZ company has created the ultimate in stereo sound.
Only **original MARANTZ parts** can insure that your MARANTZ product will continue to perform to the specifications for which it is famous.

Parts for your MARANTZ equipment are generally available to our National Marantz Subsidiary or Agent.

ORDERING PARTS:

Parts can be ordered either by mail or by telex. In both cases, correct part number has to be specified. If you order by mail, fulfil MARANTZ order forms.

The following information must be supplied to eliminate delays in processing your order:
1. Complete address
2. Complete part numbers and quanties required
3. Description of parts
4. Model number for which part is required
5. Way of shipment
6. Signature: any order form or telex must be signed otherwise such part order will be considered as null and void.

TECHNICAL ASSISTANCE

Should you require any other technical support, do not hesitate to contact the Technical Department of
MARANTZ EUROPE & Co.
Avenue Louise 326 - Bte. 32
B-1050 Brussels
Belgium
Telephone: (02) 6407830 (10 l)
Telex: 26602
Fax.: (02) 649.29.20

PARTS ORDERING

Parts may be ordered at the following addresses:

AUSTRIA
HORNYPHON
Vertriebsgesellschaft GmbH
Wienerbergstrasse 1
A 1101 Wien
Austria
Telex: 132.332

AUSTRALIA
MARANTZ AUSTRALIA
PTY., Ltd.
19 Chard Road
Brookvale, NSW 2100
Australia
Telex: 24121

BELGIUM
SVD DIVISION MARANTZ
Industrialaan 1
1720 Groot-Bijgaarden
Belgium
Telex: 24466

CHILE
MARANTZ
DIVISION OF PHILIPS S.A.
AV. Santa Maria, 0760
Casilla 2687
Santiago
Telex: 240.239

DENMARK
MARANTZ
DIVISION OF PHILIPS
SERVICE A/S
Prags Boulevard 80
Postbox 1919
DK-2300 København S
Denmark
Telex: 31201

EIRE
MARANTZ IRELAND Ltd.
Newstead
Glonkeagh
Dublin 4
Telex: 25200

FINLAND
MARANTZ
DIVISION OF OY PHILIPS Ab
Kaivokatu 8
00100 Helsinki
Finland
Telex: 124811

FRANCE
MARANTZ FRANCE
4 Rue Bernard Palissy
92600 Asnières
France
Telex: 611651

GERMANY
MARANTZ GERMANY GmbH
Max-Planck-Strasse 22
6072 Dreieich 1
Germany
Telex: 529821

THE NETHERLANDS
MARANTZ
De Limiet 3
4131 NR Vianen
The Netherlands
Telex: 47679

NORWAY
MARANTZ
DIVISION OF PHILIPS A/S
Sandstuveien 40
Oslo 6
Norway
Telex: 72640

GREAT BRITAIN
MARANTZ AUDIO U.K. Ltd
Unit 15/16
Saxon Way Industrial Estate
Moor Lane
Harmondsworth UB7 OLW
Great Britain
Telex: 935196

GREECE
ADAMCO S.A.
P.O.Box 21025
Hippocratus Street 188
Athens 11410
Greece
Telex: 216.795

ITALY
MARANTZ ITALIANA S.p.A.
Via Monte Napoleone 10
20121 Milano
Italia

JAPAN
MARANTZ JAPAN, Inc.
35-1, 7-chome, Sagamiono
Sagamihara-shi, Kanagawa
Japan

KUWAIT
AL ALAMIAH ELECTRONICS
Ussama Building
Fahd al Saleem Street
P.O.Box 23781
Safat-Kuwait
Telex: 22694

SAUDI ARABIA
AL ALAMIAH ELECTRONICS
P.O.Box 5954
University Street
Riyadh 11432
Saudi Arabia
Telex: 201530

SOUTH AFRICA
MARANTZ
DIVISION OF PHILIPS S.A.
Rainer House
Ove Street, 10
Doornfontein
Johannesburg
Telex: 483.456

SPAIN
PHONO S.A.
Ignacio Iglesias 10
Badalona (Barcelona)
Spain
Telex: 59355

SWEDEN
MARANTZ
DIVISION OF PHILIPS
Försäljning AB
Tegeluddsvägen 1
S-115 84 Stockholm
Sweden
Telex: 14060

SWITZERLAND
DYNAVOX ELECTRONICS
Route de Villars 105
1701 Fribourg
Switzerland
Telex: 942377

TURKEY
DOGRUOL Ltd.
I.M.C.
6 Blok N°6310
Unkapani
Istanbul
Turkey
Telex: 22085

MALTA
CACHIA & GALEA
Republic Street, 68D
Valetta
Telex: 1682

U.S.A.
MARANTZ COMPANY, Inc.
National Service Department
P.O.Box 577
Chatsworth, CA 91311
U.S.A.

All of the above locations are fully equipped to take care of your total service needs. Because various countries have differing configuration requirements, it is necessary that you contact the service facility in your particular country. In the event that there is no service location listed for your country, please, contact the nearest facility for the necessary assistance.

In case of difficulties, do not hesitate to contact the Technical Department at abovementioned address.

marantz®

M199

TABLE OF CONTENTS

Section	Title	Page
INTRODUCTION		3
1.	SHOCK, FIRE HAZARD SERVICE TEST:	3
2.	P.W. BOARD	3
3.	TEST EQUIPMENT REQUIRED FOR SERVICING	4
4.	OPERATIONAL DESCRIPTIONS OF AUDIO AND PERIPHERAL CIRCUITS	4
5.	OPERATIONAL DESCRIPTIONS OF MICROPROCESSOR AND ITS PERIPHERAL CIRCUITS	6
6.	MOTOR DRIVE CIRCUIT	8
7.	OTHER INPUTS AND OUTPUTS	9
8.	SINGLE-CHIP MICROCOMPUTER FOR LM6413 (QU11/QU31) N-CHANNEL E/D MOS LSI	11
9.	MECHANISM OPERATIONAL DESCRIPTION	13
10.	DISASSEMBLY	15
11.	ELECTRICAL ADJUSTMENTS	16
12.	LEVEL DIAGRAM	20
13.	WIRING DIAGRAM	22
14.	PARTS LOCATION	24
15.	EXPLODED VIEWS AND PARTS LIST	28
16.	ELECTRICAL PARTS LIST	34
17.	TECHNICAL SPECIFICATIONS	39
18.	SCHEMATIC DIAGRAM	40

How to use this service manual

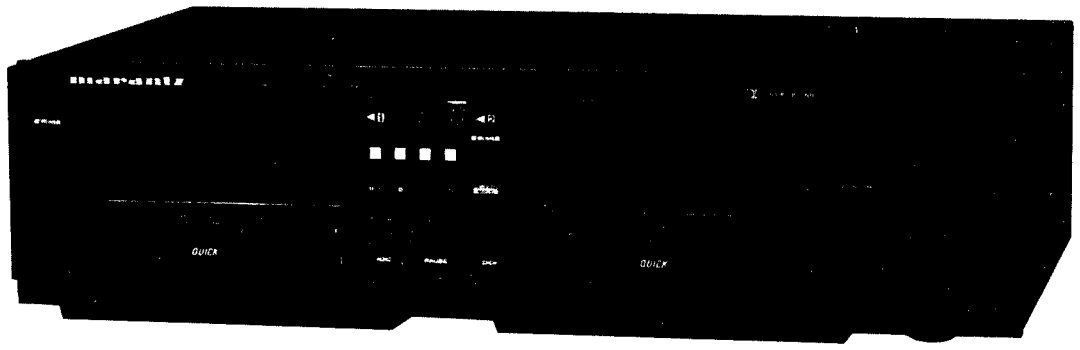
- The "Common parts" which Marantz Japan, Inc. has established are eliminated from this service manual.
- These "Common parts" are applied to all models in the service manuals arranged and issued by MJI.
- To indicate clearly the common parts in the schematic diagram, a line is drawn above or under the Ref. Desig. No. of applicable parts.
- "Common parts" can be supplied from the Marantz service center as ever.
  In case of ordering, please establish the parts number of 10 figures following the procedure mentioned in this service manual "How to establish the parts number for common parts".

NOTE:
When you order parts to the Marantz parts center, please take notice of the following points.

1. **Please correctly write the parts number of 10 figures following the rule.**
2. **Since ordering parts by the Ref. Design. No. or ratings indicated in the schematic diagram does not satisfy the above conditions, the Marantz parts supply system does not work properly.**
   As this case is apt to cause a trouble, please pay attention to it.

M5539

MODEL SD565 CASSETTE DECK



NTRODUCTION

his service manual are prepared for use by Authorized /arranty Station and contains service information for larantz Stereo Cassette Deck.

ervicing information and voltage data included in this anual are intended for use by the knowledgeable and xperienced technician only. All instructions should be read arefully. No attempt should be made to proceed without a ood understanding of the operation of the Cassette Deck.

he parts list furnishes information by which replacement arts may be ordered from the Marantz Company. A simple escription is included for parts which can be usually btained through local suppliers.

. SHOCK, FIRE HAZARD SERVICE TEST:

AUTION: After servicing this appliance and prior to turning to customer, measure the resistance between ther primary AC cord connector pins (with unit NOT onnected to AC mains and its Power switch ON), and the ce or front Panel of product and controls and chassis ottom.

ny resistance measurement less than 1 Megohms should use unit to be repaired or corrected before AC power is plied, and verified before return to use/customer.

ef. UL Standard NO. 1270. Para. 66.3 D (Mandatory est after servicing Electrical Appliances, effective 7-1-83).

2. P.W. BOARD

As can be seen from the circuit diagram, the chassis of your Cassette Deck consists of the following units. Each unit mounted on a printed circuit board is described within the square enclosed by a bold dotted line on the circuit diagram.

1. Dolby NR . . . . . mounted on P.W. Board P603
2. Audio Main . . . . . mounted on P.W. Board PJ03
3. Mix Mic Amp/ Volume . . . . . mounted on P.W. Board PJ23
4. NR Switch/Rec . . . . mounted on P.W. Board PJ33
5. W-Rec . . . . . mounted on P.W. Board PJ53
6. Key Switch/Function LED . . . . . mounted on P.W. Board PS03
7. Logic Main . . . . . mounted on P.W. Board PU03
8. Timer Switch . . . . . mounted on P.W. Board PU13
9. Power Transformer Secondary . . . . . mounted on P.W. Board PU63
10. Regulator . . . . . mounted on P.W. Board PU73
11. Power Standby Switch . . . . . mounted on P.W. Board PU83
12. Power Transformer Cover . . . . . mounted on P.W. Board PU93
13. LED Meter Driver . . . mounted on P.W. Board PX03
14. LED Connect . . . . . mounted on P.W. Board PX13
15. Function LED Connect . . . . . mounted on P.W. Board PY03
16. Seven Segment LED . mounted on P.W. Board PY53

M5540

3. TEST EQUIPMENT REQUIRED FOR SERVICING

For measuring or checking your Cassette Deck, the following instruments and materials are necessary.

VTVM
- Audio Oscillator (AF OSC)
- Attenuator (600 Ω)
- Oscilloscope
- Bandpass Filter (1 kHz)
- IEC A-Curve Filter
- Wow and Flutter Meter
- Torque Meter (Cassette Type)
- Digital Frequency Counter
- Distortion Meter
- Black Tapes (Completely erased with bulk eraser)
  TDK AC-212 (Normal)
  TDK AC-512 (Special/CrO_2)
  TDK AC-712 (Metal)

NOTE:
If any doubt is noted in a measured value, use new tape.

• Test tape	(New Tape)
TCC-111•MTT-111	Wow and Flutter, Tape Speed
TCC-140•MTT-112B	Signal-toNoise Ratio
TCC-130•MTT-150	Adjustment of Output Level
TCC-161•MTT-256	Frequency Response (for Normal)
TCC-261•MTT-356	Frequency Response (for Special/ CrO_2 and Metal)
TCC-192•MTT-121	Cross Talk
TCC-194•MTT-141 (A-BEX)•(TEAC)	Channel Separation

4. OPERATIONAL DESCRIPTIONS OF AUDIO AND PERIPHERAL CIRCUITS

The SD565 uses new TDA1600 and TDD1601 ICs exclusively for the tape audio circuits.

4.1 Playback Equalizer Amp and Bias Oscillator IC TDA1600

4.1.1 Built-in circuit of IC and features (Refer to Fig. 1)

(1) PB EQ amp: Playback equalizer circuit including rec/play head switching and 120 μ/70 μsec time constant switching circuits.

(2) Bias OSC: Tape bias oscillator circuit including CrO_2/Metal indication switching circuit and Normal/CrO_2/Metal shift function.

4.1.2 Block diagram

Figure 1 shows the block diagram incorporating TDA1600.

(1) Each switching operation is performed by an electronic switching method and the input conditions are as follows:
Pin ⑬ Tape Selector: (Normal) V+, (CrO_2) V/2, (Metal) V-,
Pin ㉓ Rec/Play: (Play) V-, (Rec) V+

(2) This IC operates as a DC 15 V single power supply, however, since the audio circuit ground is fixed at 1/2 V, it functions as a ±7.5 V dual-power supply externally.

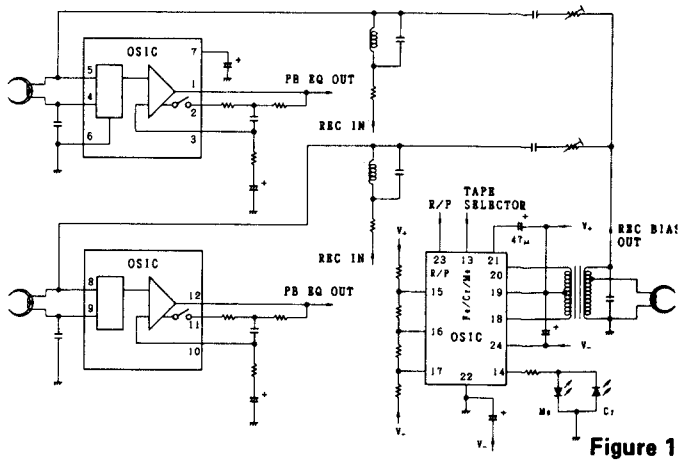
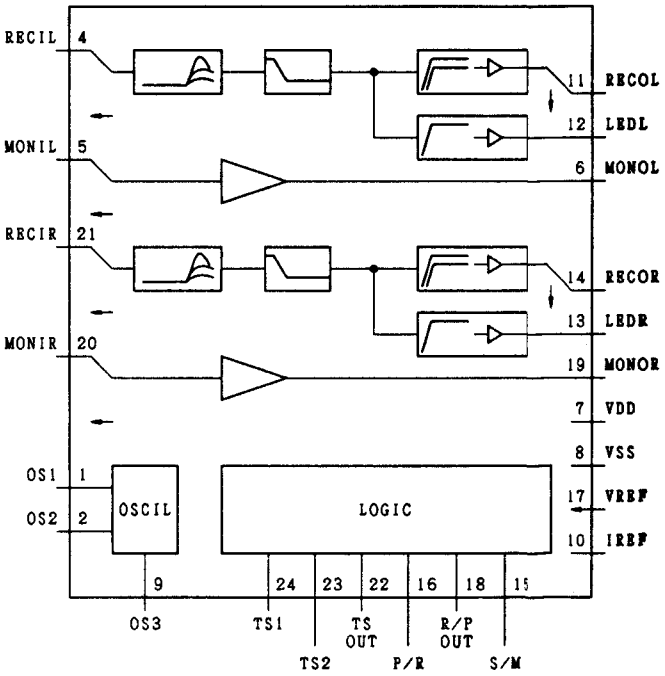


Figure 1

4.2 Recording Equalizer Amp IC TDD1601

4.2.1 Buit-in circuit of IC and features

Figure 2 shows the internal construction of IC and pin connections.



PIN	SIGNAL	DEFINITION
1	OS1	Oscillator input
2	OS2	Oscillator output
3	N.C.	
4	RECIL	Recording path input left channel
5	MONIL	Monitor path input left channel
6	MOXOL	Monitor path output left channel
7	VDD	Highest power supply
8	VSS	Lowest power supply
9	OS3	Oscillator control
10	IREF	Current adjustment
11	RECOL	Recording path output left channel
12	LEDL	Ledbar output left channel
13	LEDR	Ledbar output right channel
14	RECOR	Recording path output right channel
15	S/M	Signal/mute input
16	P/R	Playback/record selection input
17	VREF	AC ground
18	R/P OUT	Record/playback selection output
19	MONOR	Monitor path output right channel
20	MONIR	Monitor path input right channel
21	RECIR	Recording path input right channel
22	TS OUT	Tape selection output
23	TS2	Tape selection input 2
24	TS1	Tape selection input 1

Figure 2

(1) **Rec EQ Amp:** Recording equalizer amp using the switched capacitor method, and its compensation levels conform to IEC standard tapes. The peak frequency is determined by the clock frequency and shifted to each tape type programmably.
In the SD565, they are set to the following values:

	Normal (480kHz)	High-Speed Dubbing (480kHz / OS3"H")
Normal	17.5kHz	34.0kHz
CrO_2	18.5kHz	36.0kHz
Metal	19.5kHz	40.0kHz

(Table 1)

(2) **Monitor Path:** By passing through this IC as a line output path, pop noise on Rec/play switching will be reduced.

(3) **Electrical Switching:** Rec/play and Tape Selector switching signals are output for IC internal switching and the switching between two TDA1600s, by each Rec/play, Tape Selector and Play Back Mute input.
The input signals correspond to V- to V- +5 V for mechanism logic, and output signals are shifted to V- to V+ level to perform electronic switching.

4.2.2 Circuit configuration (Block diagram)

Figure 3 shows the simplified block diagram of TDA1600, TDD1601 and TEA0665 (Dolby NR IC).

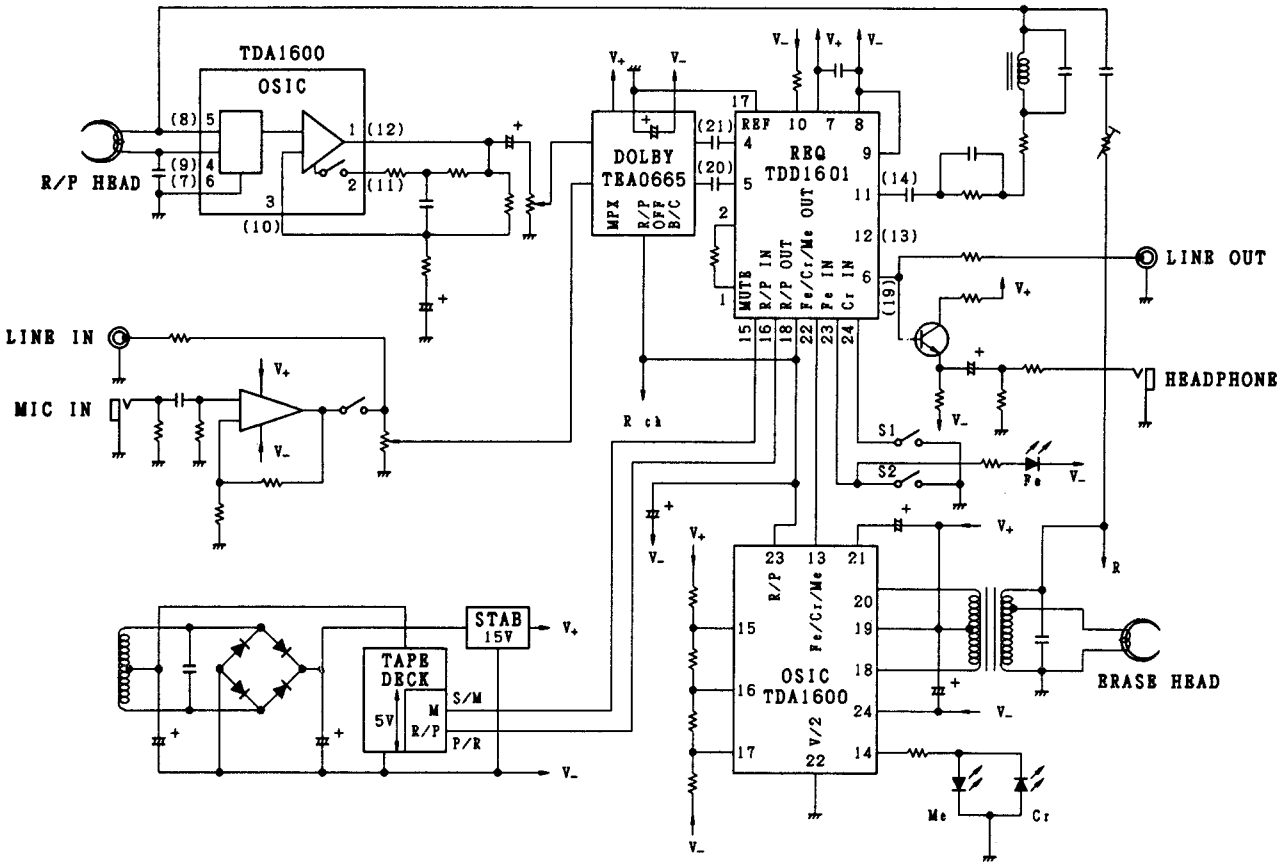


Figure 3

M5542

5. OPERATIONAL DESCRIPTION OF MICROPROCESSOR AND ITS PERIPHERAL CIRCUITS

5.1 Mechanism of This Unit

The rotational energy of the flywheel operates the head chassis movement, head rotation, braking, etc. A plunger is used to eliminate flywheel energy, so, when the mechanism is switched, pulse voltage is applied to the capstan motor and plunger.

5.2 Initial check

With a tape loaded in the cassette holder, set the Power switch to ON and check the following operations.

(1) The display in reverse mode is " ⊃ ". The display is switched from " ⊂ ", " ⇄ " and back to " ⊃ " each time the REV. MODE selector button is pressed.

(2) The tape running direction indicator, forward play or reverse play, depends on the tape running direction before the power was last switched off.

(3) The operation buttons become operable 4 seconds after the power is switched on.

a) When a cassette tape is loaded in the cassette holder, the tape running direction indicator flashes, then lights 4 seconds later.

b) When a cassette tape is not loaded in the cassette holder, the tape running indicator lights 4 secconds later.

(4) When the mechanism is not in the stop mode, turning the power switch on resumes the stop mode.

5.3 Microprocessor Operational Check

5.3.1 VDD, $\overline{INT}$, $\overline{RES}$ power ON/OFF condition

Figure 5 shows the leading and trailing characteristics of each VDD, $\overline{INT}$ and $\overline{RES}$ pin of the feature control microprocessor (QU01), mechanism control microprocessor (QU11, QU31), and figure 4 shows its diagram. Each timing is important for the normal function the microprocessors.

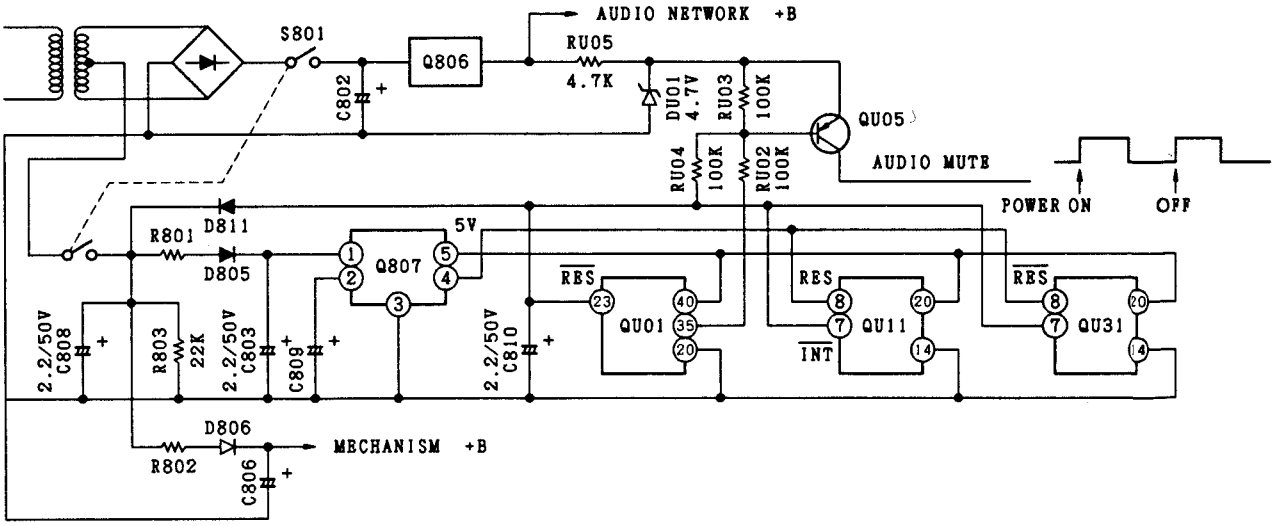


Figure 4

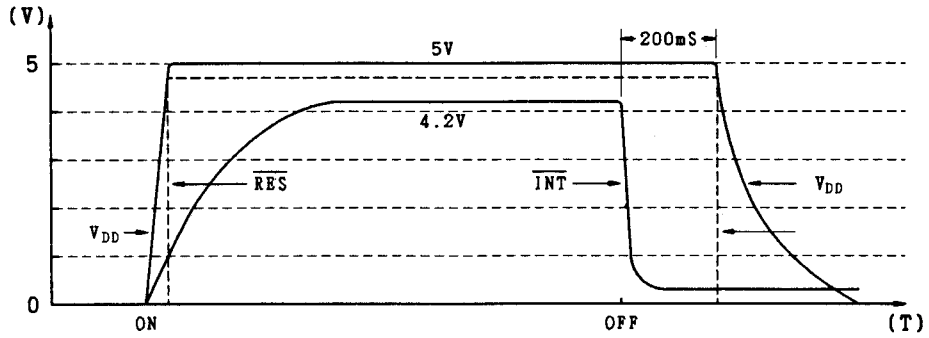


Figure 5

.3.2 Operational description of each section

1) Q807: Regulator with reset function

L37MR05 RESET OPERATION Cd = 0.1 μF

The microprocessor $\overline{RES}$ input is set so the signal is applied slightly after the rising of VDD (power ON), and slightly before the trailing time (power OFF). This time lag is determined by C809 connected to IC pin②. Figure 7 shows the timing diagram.

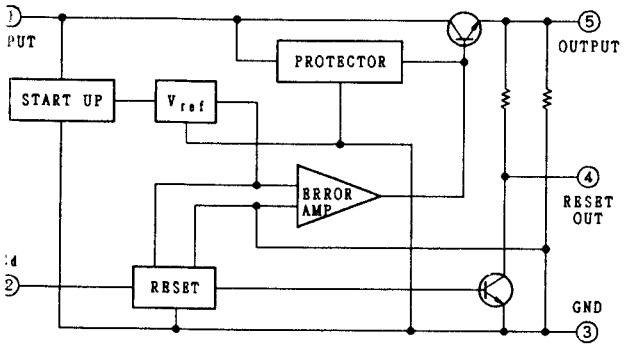


Figure 6

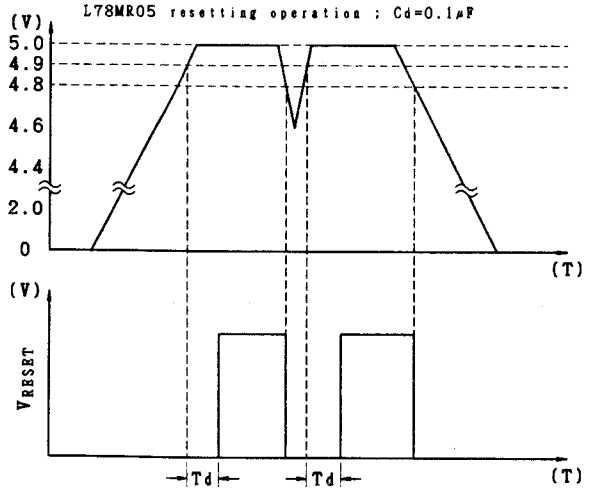


Figure 7

R801, D805, C803

Used for VDD back up in the microprocessor; backs up the microprocessor for the time required to return the mechanism to the initial condition (stop mode) when the power is turned off.

R802, D806, C806

Used for the power back up of the mechanism. Backs up the solenoids and capstan motor for the time required to return the mechanism to the initial condition (stop mode) when the power is turned off.

C808, R803, D811, RU04

Generates signals for the feature microprocessor $\overline{RES}$ and mechanism microprocessor $\overline{INT}$. The feature microprocessor $\overline{RES}$ goes high from low after the mechanism microprocessor has been set. The stop condition on turning the power off is set at the mechanism microprocessor $\overline{INT}$ pin, and the stop operation is activated when it goes low from high. To obtain the fast trailing characteristic on power off, the charged energy of the ripple filter C808 is discharged via R803.

(5) RU03, RU02, QU05

Outputs the audio mute signal when the power is turned on/off. When the power is turned on, the signal is applied to C808 for charging via RU04, transistor QU05 is turned on, and when the power is turned off, the discharged signal is applied to R803, and QU05 is turned on immediately to reduce pop noise.

5.3.3 Feature microprocessor and mechanism microprocessor

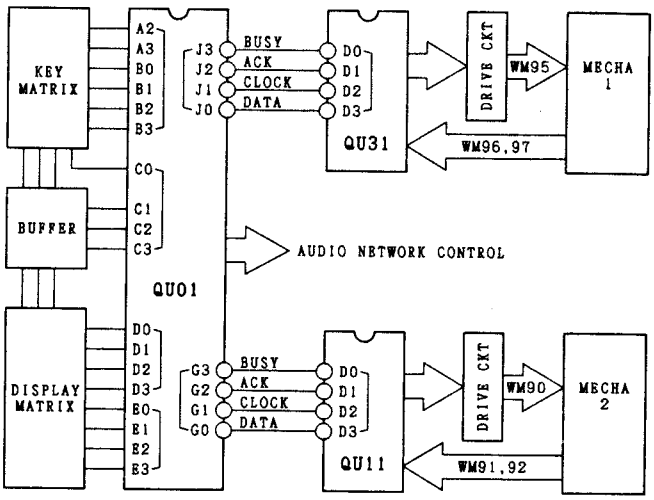


Figure 8

(1) Transmission/reception of feature microprocessor and mechanism microprocessor.
Bidirectional transmitting/receiving is performed with 4 I/O lines.

(2) When the $\overline{RES}$ pin of feature microprocessor goes high from low, $\overline{RES}$ command is output to the mechanism microprocessor via DATA line.

(3) Mechanism microprocessor has the function to the control mechanism and to judge the interval between tunes when searching.

5.3.4 Key matrix

	⑥ B3	⑤ B2	④ B1	③ B0	② A3	① A2
⑦ C3	REV PLAY	FWD PLAY	REC	CONTINUE REC	SELECT A	MODE
⑧ C2	REW	FF	REC MUTE	CONTINUE PLAY	SELECT B	QMS
⑨ C1	STOP	PAUSE	PARALLEL REC	NORMAL DUBBING	HIGH DUBBING	MEMO
⑩ C0				TIMER PLAY	TIMER REC	SYNCREC

M5544

5.3.5 Initialization

Turn the power switch on.

(1) When the $\overline{RES}$ signal from QU01, QU11, QU31 rises the capstan motor rotates to return the head chassis to the stop position, if it is not in the stop mode.

(2) When the head chassis is already in the stop position, or 4 seconds after the head chassis has been returned to the stop position, the tape running direction indicator lights.

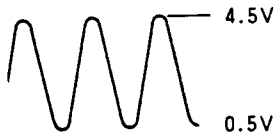
(3) When the tape running direction indicator lights, the microprocessors begin accepting the timer-play, timer-rec and each operation key.

5.3.6 Check points on abnormal initialization

(1) When operation (1) does not function (when head chassis is not in the stop position):

a) Check the waveform of QU11 pin⑥.

Pin ⑥



b) Check the rising characteristics of VDD, $\overline{INT}$ and $\overline{RES}$. When they go high with the rising characteristics shown in Fig. 5, they are normal.

c) When the head is not returned to the stop position, check the motor drive circuit and its vicinity.

(2) When operation (2) does not function:

a) When the tape running direction indicator is not lit, check the display PC board and surrounding wiring, etc. When the indicator does not blink after four seconds with the tape loaded, check that QU11, QU31 pin ㉑ is low with the tape loaded. (When the power is turned on, the initial condition of the mechanism is transmitted to the feature microprocessor.)

b) When the forward direction indicator (▷) lights in spite of the head being in the reverse direction, check the wiring of FWD/REV switch, etc.
QU11, QU31 pin ㉕ is low when in reverse mode.

(3) When operation (3) does not function:

a) Timer operation does not function:
Check the wiring, etc. in the vicinity of timer switch.

b) Key operation does not function:
When more than two keys are pressed causing switch binding on the mechanism control key switch PC board, the key operations are not accepted.

c) When the cassette-in switch of the mechanism is not set ON, check the switch condition and wiring, etc.

6. MOTOR DRIVE CIRCUIT

6.1 F/R Motor Drive Circuit

The direction of F/R motor rotation is determined by the output from pins ⑮ ⑯ of QU11/31, and the winding torques in PLAY and FF/REW modes are switched by pin ⑰ of QU11/31.
The Output according to the pin operating condition is shown below.

QU11/31 PIN NO.	STOP	FF	REW	FORWARD PLAY	REVERSE PLAY
⑮	L	H	L	H	L
⑯	L	L	H	L	H
⑰	H	H	H	L	L

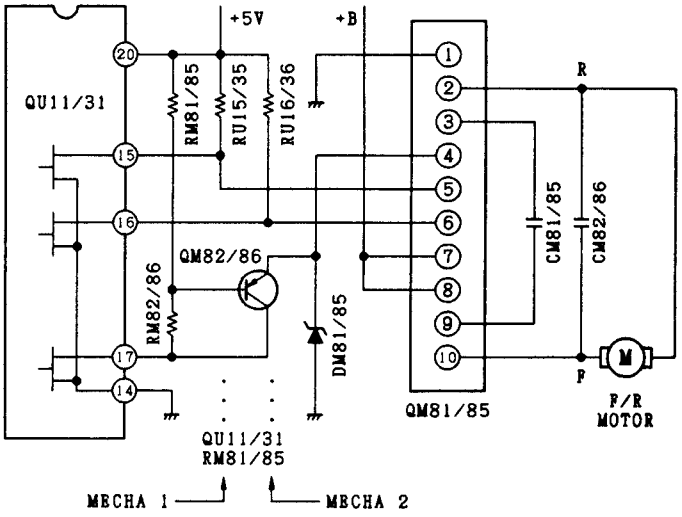


Figure 9

6.2 Capstan Motor Drive Circuit

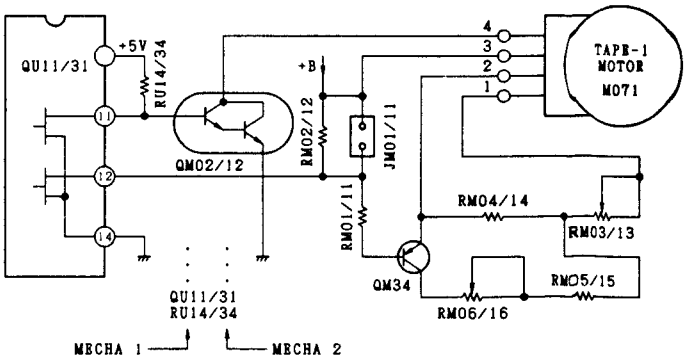


Figure 10

Other than the normal tape running condition, the capstan motor also rotates when the head chassis is shifted up and down. Therefore, when a malfunction occurs in the capstan motor drive circuit, the head chassis cannot be moved.

High-Speed Mode:
To rotate the capstan motor in high speed mode, set QM34 to OFF. By short-circuiting JM01/11, the capstan motor is changed to the high-speed mode during Play. When performing speed adjustment, first adjust in the high speed mode, then perform normal speed adjustment.

6.3 Solenoid Drive Circuit

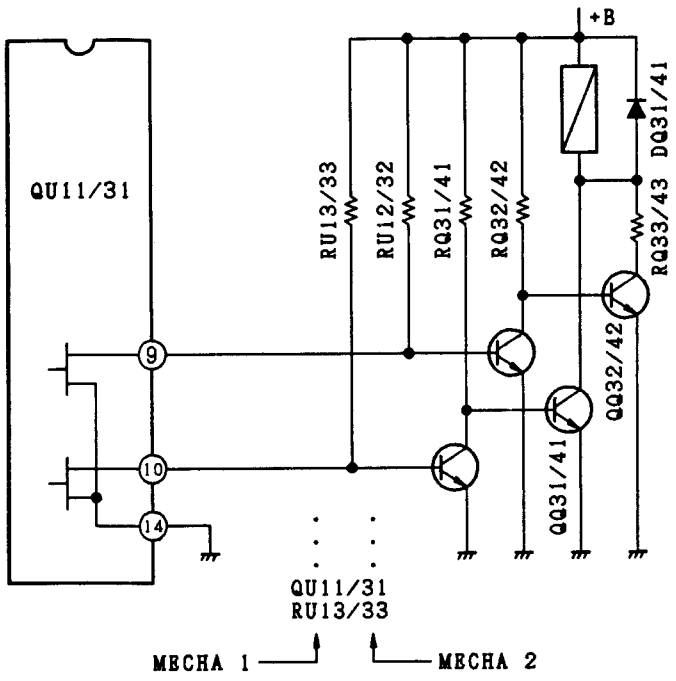


Figure 11

To shift the head chassis up/down, solenoids are energized for a fixed time so that the cam gear and the flywheel gear can engage.
Depending on the shape of the gear and its purpose, the energizing time differs.
RQ33/34 prevent heating of solenoid when it is pulled continuously such as Cue/Rev mode.

QU11/31 PIN NO.	STOP → FWD PLAY	STOP → REV PLAY	FWD/REV PLAY → STOP	CUE/REV
⑨	60mS	320mS	60mS	—
⑩	60mS	60mS	60mS	—

7. OTHER INPUTS AND OUTPUTS

7.1 Remote Control Easy and Easy Auto Stop

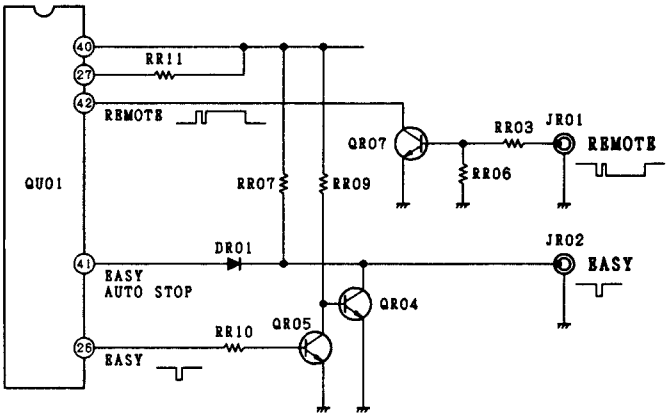


Figure 12

a) Remote Control
By pressing the remote control switch, the received signal from the transmitter is input to JR01 to operate according to each command. During input of the remote control signal, the microprocessor reads out the command, resulting in display flicker.

b) EASY Terminal
Pin ㉖ of QU01 is high in normal, however, when the deck is in the PLAY mode, it outputs a low level pulse. The width of this pulse is 20 msec when either TAPE-1 or TAPE-2 enters into PLAY mode.
When the deck is set to REC or REC PAUSE mode, it goes low continuously. In dubbing mode, it goes high same as in normal PLAY mode.

c) Easy Auto Stop Terminal
Pin ㊶ of QU01 is the Auto Stop operation input Terminal. When the EASY Terminal (JR02) goes low by the other system for more than 20 msec, this pin ㊶ stops the deck. This is activated during Play, Play Pause or search mode (to stop the deck operation).

7.2 SYNC REC Terminal
When the SYNC REC input Terminal (JR03) goes low, the transistor QR03 is turned ON and pin ① and ⑦ of the microprocessor QU01 are energized to operate the SYNC REC function. However, the following condition should be satisfied:
Timer switch is set to PLAY.
Deck is in the REC PAUSE mode.

7.3 QMS
Press the QMS button repeatedly by the number of tuned to be skipped during STOP or PLAY mode, and then press FF or REW button (◁◁/▷▷) in the direction of the desired tune to be selected to activate the tune select function. At this time, the digit display shows the number (1 to 15) pressed.
The QMS circuit converts the playback signal through the comparator so that the microprocessor can be read. The level setting is performed by the QMS circuit, and judgement of the interval time between tunes is set internaly in the microprocessor.

M5546

7.3.1 Playback speed and time constant

If the FF/REW time is set to 100 sec, the FF/REW speed at the beginning of the tape is 11 times normal PLAY speed, and becomes approx. 25 times at the end of the tape. The interval between tunes is usually set to 4 seconds in PLAY speed. Therefore, the interval time between tunes in the CUE/REVIEW mode becomes 160–370 msec.

7.3.2 Microprocessor setting

The mechanism microprocessor provided with this unit uses the time-read system for detecting the interval between tunes. For this, it takes 3 seconds in PLAY mode and 120 msec in CUE/REVIEW mode to read out the intervals.

7.3.3 Judgement level setting

(0dB, 200nWB: The characteristic that Q01 output goes high from low according to the recording level on the tape)

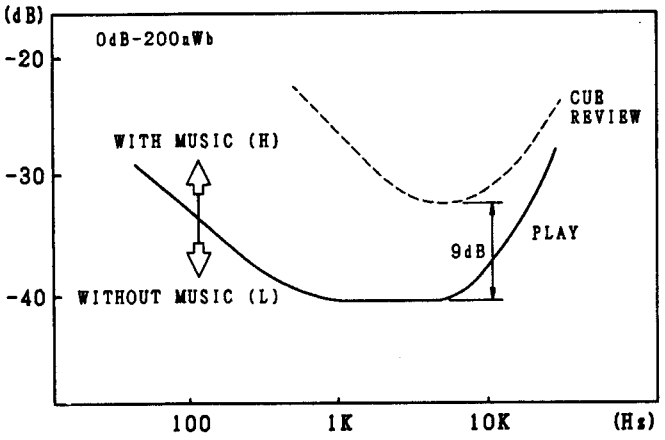


Figure 13

a) Frequency response is changed between PLAY mode and search mode, to prevent malfunction with the music signal. In PLAY mode, QB02 is turned ON and the frequency response is widened.
Switching between PLAY mode and search mode is performed by pin ㉞ of QU01; it goes low in PLAY mode.

7.4 REEL PULSE Terminal

Pin ㉗ of QU11/31 is connected to the output of the reel rotation sensor. Using this output, Auto Shut-off, Memory Rewind Stop and cueing compensation in QMS mode are performed.
The Auto Shut-off function is operated 5.2 seconds after the reel rotation output pulse is stopped.

7.5 QUICK REVERSE

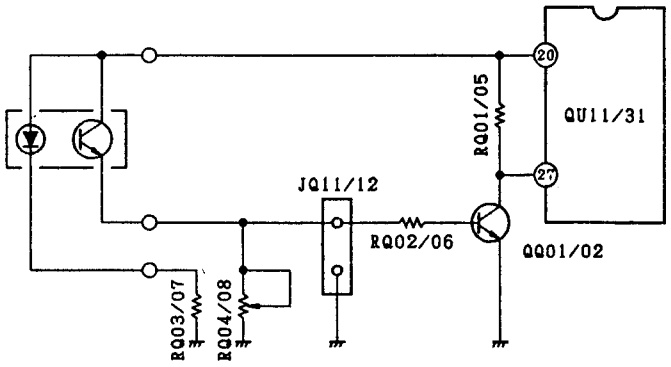


Figure 14

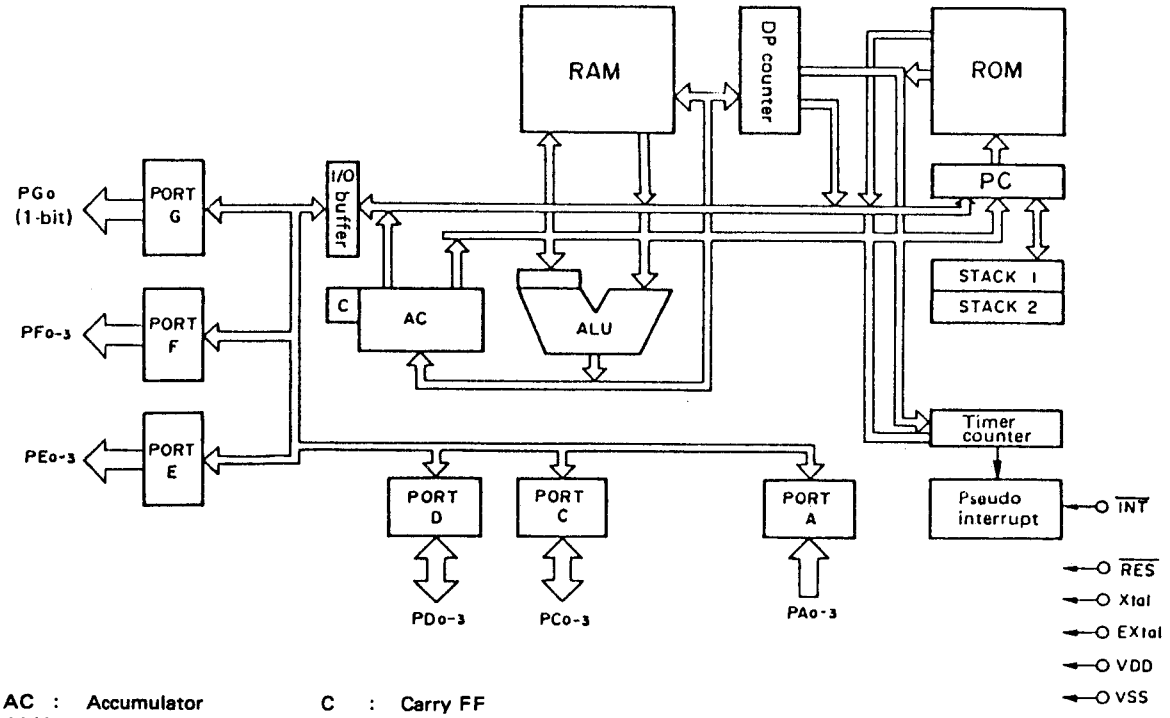
The difference in the amount of transmission of light between the magnetic substance of a tape and the leader tape is detected to allow the head to rotate readily.
In order to prevent malfunction of the leader tape by the marker line while the leader is running, the QUICK REVERSE cannot be activated for 15 seconds after the PLAY is initiated.
Make the sensitivity adjustment of the QUICK REVERSE as in the following:
Connect the DC voltmeter to the JQ11/12 and set the voltage obtained by running the tape leader to a prescribed voltage. Use the following leader tape for adjustment since the quality of leader tape differs depending on manufacturers:

Adjustment tape . . . . . MAXELL UD46
Adjustment voltage . . . . . 1.1 – 15V

M5547

SINGLE-CHIP 4-BIT MICROCOMPUTER FOR LM6413E (QU11/QU31) N-CHANNEL E/D MOS LSI

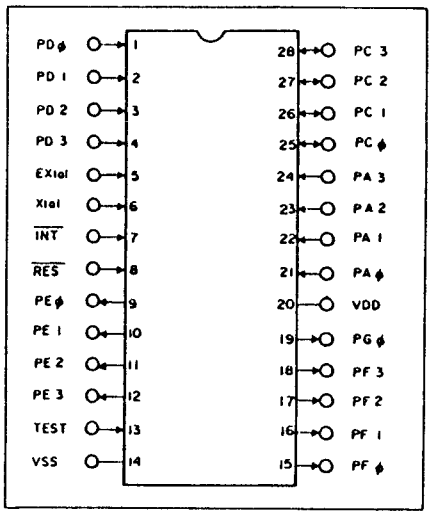
SYSTEM BLOCK DIAGRAM



AC : Accumulator
ALU: Logic operation unit
DP : Data pointer
C : Carry FF
PC : Program counter

Figure 15

PACKAGE AND TERMINAL NAME



(Terminal Name)

Xtal, EXtal	:	Resonator for oscillator	
$\overline{INT}$	:	Interrupt	
$\overline{RES}$	:	Reset	
PA_{0-3}	:	Input port	A_{0-3}
PC_{0-3}	:	I/O port	C_{0-3}
PD_{0-3}	:	I/O port	D_{0-3}
PE_{0-3}	:	Output port	E_{0-3}
PF_{0-3}	:	Output port	F_{0-3}
PG_0	:	Output port	G_0
TEST	:	Test	

M5548

• TERMINAL FUNCTION (LM6416E (QU03))

Terminal Name	I/O	Function
$\overline{INT}$	Input	Pseudo interrupt request input terminal.
$\overline{RES}$	Input	Reset input terminal.
PA_{3-0}	Input	Input ports A_3 to A_0 In input mode, 4-bit input and bit test are allowed.
PC_{3-0}	I/O	I/O ports C_3 to C_0 In input mode, 4-bit input and bit test are allowed. In output mode, 4-bit output, bit set/reset and immediate data output are allowed.
PD_{3-0}	I/O	I/O ports D_3 to D_0 In input mode, 4-bit input and bit test are allowed. In output mode, 4-bit output, bit set/reset and immediate data output are allowed.
PE_{3-0}	Output	Output ports E_3 to E_0 4-bit output and bit set/reset are allowed.
PF_{3-0}	Output	Output ports F_3 to F_0 4-bit output and bit set/reset are allowed.
PG_0	Output	Output port G_0 In output mode, 1-bit output and bit set/reset are allowed.
X'tal	I/O	External terminal of the resonance circuit for local clock signal oscillation. A ceramic resonator and CR are connected to the space between this terminal and Ex'tal terminal.
Ex'tal	Input	Terminal operated with clock signal externally supplied. A ceramic resonator and CR are connected to the space between the X'tal and this terminals when using the local clock signal oscillator.
V_{DD}	Input	Power terminal, usually connected to +5V.
V_{SS}		Connected to 0V of power supply.
TEST	Input	LSI test terminal, usually connected to V_{SS} (0V).

• MAXIMUM RATINGS (Ta = 25°C, V_{SS} = 0V)

Item	Symbol	Condition	Min.	Max.	Unit
Maximum supply voltage	V_{DD} max.		−0.3	+8	V
Maximum input voltage	V_{IN} max.		−0.3	+15	V
Maximum output voltage	V_{OUT} max.	Output transistor OFF	−0.3	+15	V
Mean output current	I_{OLA} (1)	Per terminal of port	−	20	mA
(Average at interval of 100 ms)	I_{OLA} (2)	Sum of C and D ports	−	100	mA
	I_{OLA} (3)	Sum of E, F and G ports	−	110	mA
Peak output current	I_{OLA} (1)	Per terminal of port	−	20	mA
	I_{OLA} (2)	Sum of C and D port	−	120	mA
	I_{OLA} (3)	Sum of E, F and G port	−	130	mA
Allowable power dissipation	P_d max.	−30°C to +70°C		400	mW
Ambient operating temperature	T_{opg}		−30	+70	°C
Ambient storage temperature	T_{stg}		−55	+125	°C

M5549

- **OPERATING CONDITION** (Ta = −30 ~ +70°C, V_{SS} = 0V)

Item		Symbol	Min.	Max.	Unit
Recommended operating supply voltage		V_{DD}	4.5	6.5	V
Port input	High-level input voltage	V_{IH} (1)	0.6 V_{DD}	13.5	V
	Low-level input voltage	V_{IL} (1)	V_{SS}	0.3V_{DD}	V
$\overline{INT}$; $\overline{RES}$	High-level input voltage	V_{IH} (2)	0.7V_{DD}	13.5	V
	Low-level input voltage	V_{IL} (2)	V_{SS}	0.3V_{DD}	V
EX'tal	High-level input voltage	V_{IH} (3)	0.8V_{DD}	V_{DD}	V
	Low-level input voltage	V_{IL} (3)	V_{SS}	1.0	V
	Clock signal period	tc (ϕ)	1.0	10.0	μs
	High-level clock pulse width	twϕ_H	0.3		μs
	Low-level clock pulse width	twϕ_L	0.47		μs
Oscillator circuit	Resistor installed outside ceramic oscillator	R1	900	1100	kΩ
	Capacitor installed outside ceramic oscillator	C1	200	240	pF
	Capacitor installed outside ceramic oscillator	C2	200	240	pF
	Resistor installed outside CR oscillator	R2	8	100	kΩ
	Capacitor installed outside CR oscillator	C3	45	200	pF
TEST	Low-level input voltage	V_{IL} (4)	V_{SS}	0.4	V

9. MECHANISM OPERATIONAL DESCPRIPTION

9.1 STOP

The head position is always pointed in the FWD direction. (Refer to Fig. 16.)

9.2 FWD (FORWARD) PLAY

a) When voltage is applied to the solenoid, the play arm is released by the stopper of the cam, and the cam gear is engaged with the flywheel gear and rotation starts.
By the rotation of the cam gear, the head chassis is driven as shown in Fig. 19.

b) When the cam of Item a operates, it is guided towards the cam section for FWD operation and locked in the condition shown in Fig. 20.

9.3 REVERSE PLAY

a) When voltage is applied to the solenoid, it is held for a duration longer than the FWD PLAY.
While the solenoid is held for a longer period, it is guided to the can slot for REVERSE operation and locked in the condition shown in Fig. 21.

b) The head chassis is driven in the same way as Item. 6.2 a above.

9.4 FWD/REV PLAY →STOP

Voltage is applied to the solenoid to rotate the cam gear, and the mechanism returns to the condition shown in Fig. 17.
(The head position always points in the FWD direction.)

9.5 CUE/REVIEW (PLAY →CUE/REVIEW)

To start CUE/REVIEW (QMS) from FWD/REVERSE PLAY, voltage begins to be applied during PLAY and the condition is as shown in Fig. 18.

9.6 CUE/REVIEW →PLAY

When voltage is applied to the solenoid in the condition of Item 6.5, the cam is returned to STOP mode condition and STOP then PLAY is operated.

M5550

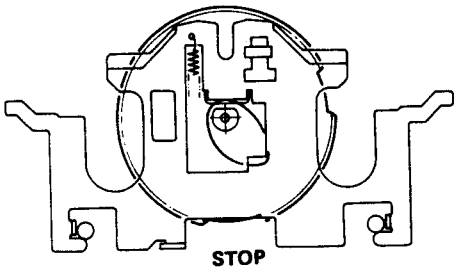


Figure 16

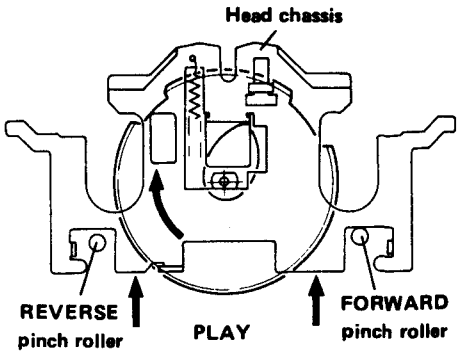


Figure 19

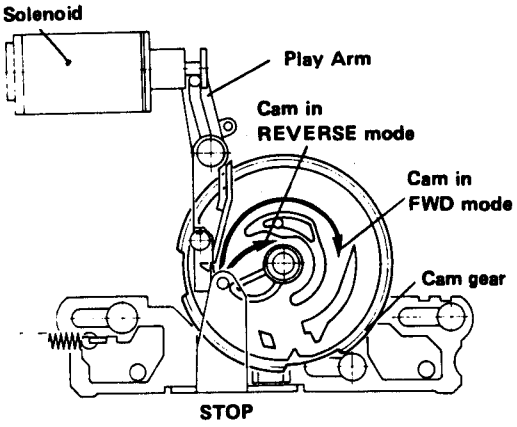


Figure 17

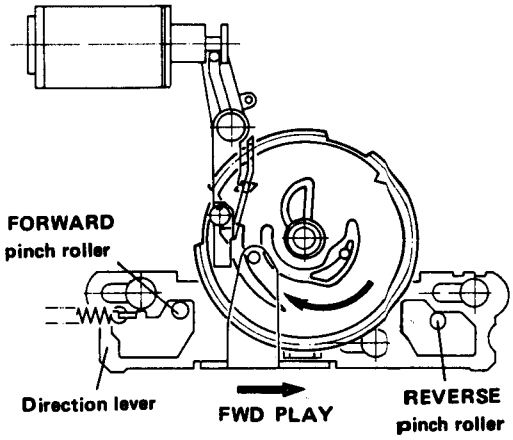


Figure 20

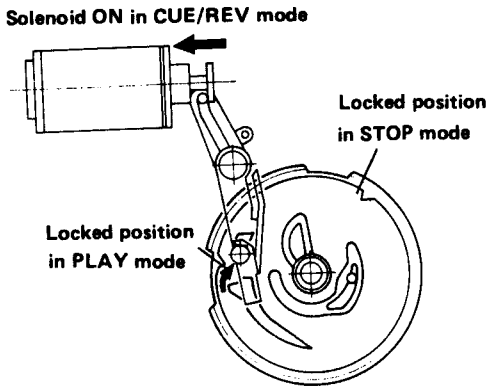


Figure 18

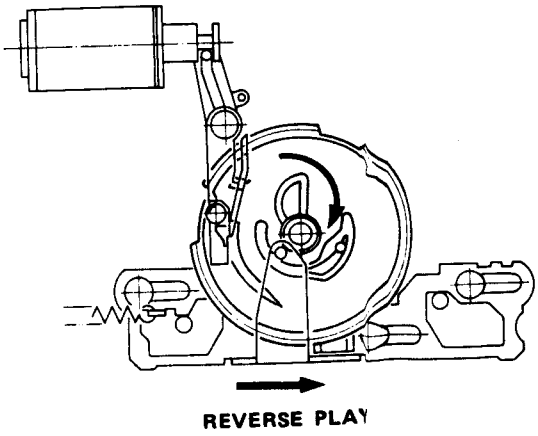


Figure 21

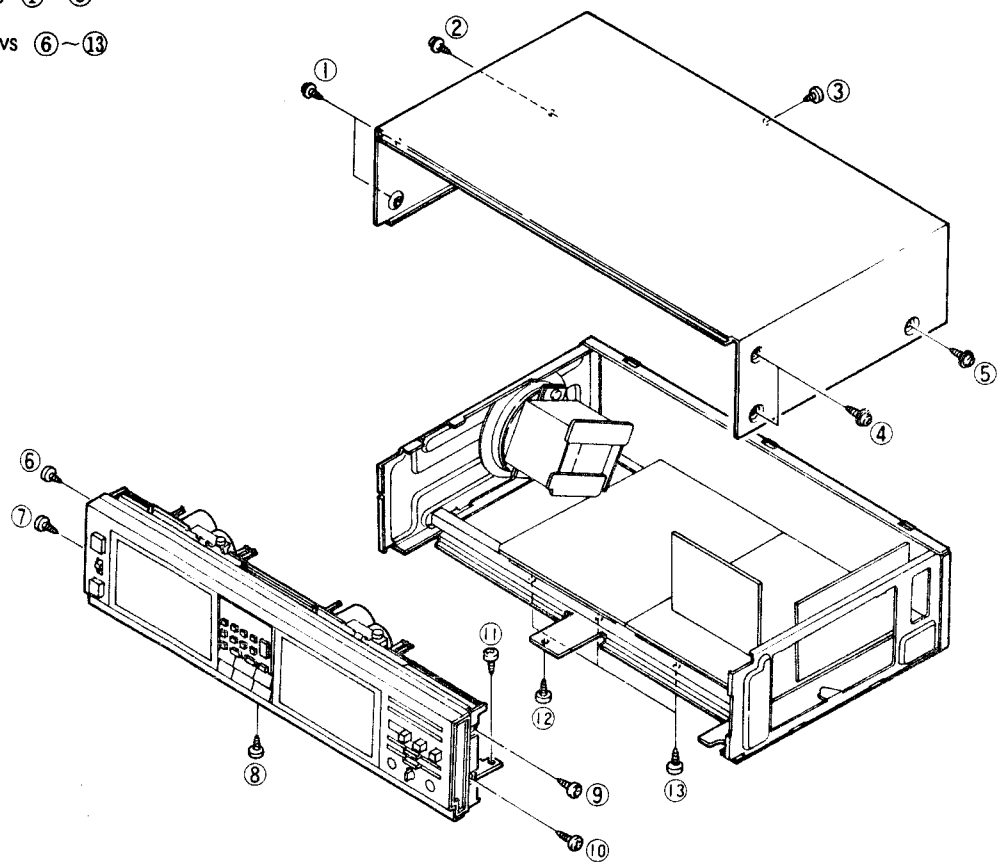
M5551

). DISASSEMBLY

⁾. 1 REMOVING THE TOP COVER AND FRONT PANEL

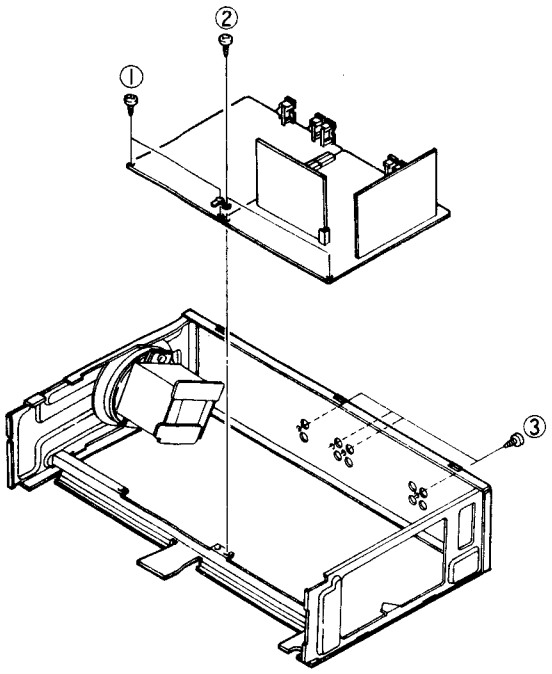
ɨmove 7 screws ①~⑤

ɜmove 10 screws ⑥~⑬



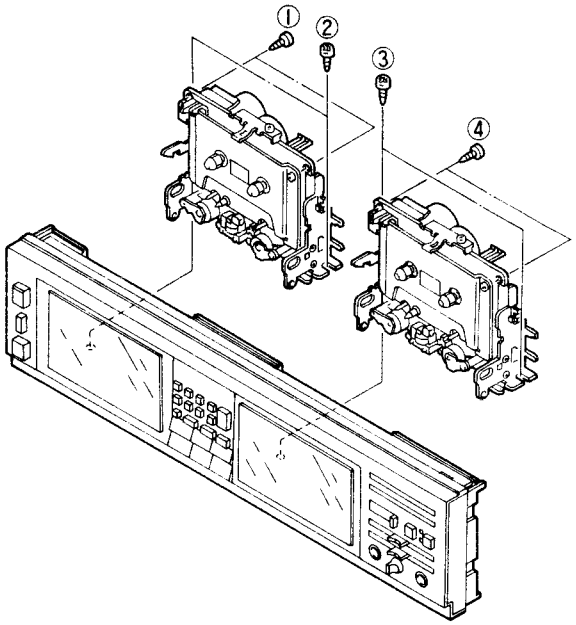
⁾. 2 REMOVING THE MAIN P.W. BOARD

ɛmove 8 screws ①~②



10. 3 REMOVING THE MECHANISM

Remove 8 screws ①~④



M5552

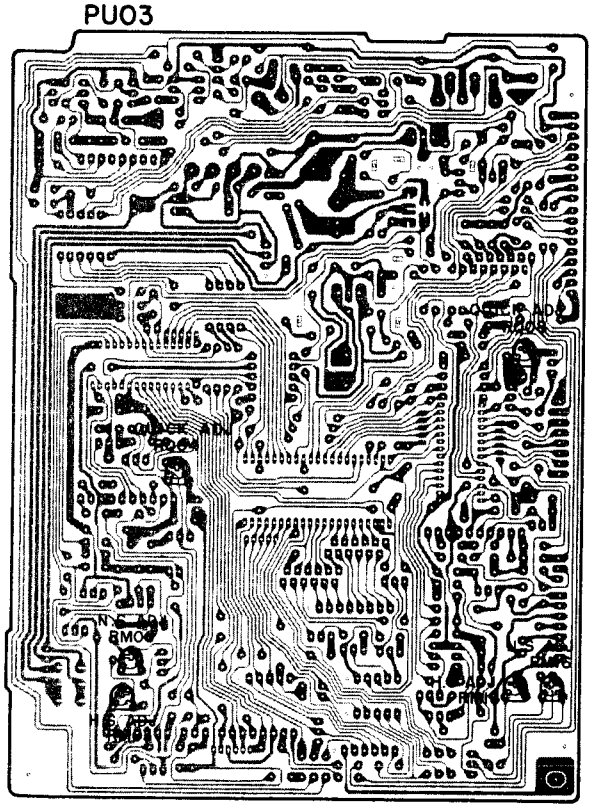
11. ELECTRICAL ADJUSTMENTS

Precautions before Adjustment

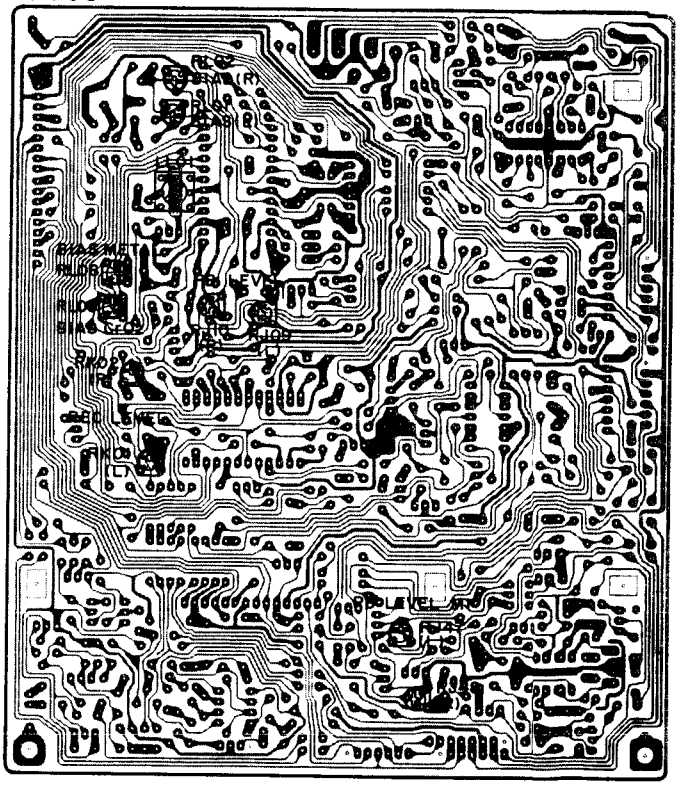
1. Before playing the test tape back, thoroughly demagnetize the heads, capstan and similar metal parts using an eraser as the test trape-recorded tone is easily erased.
2. Do not place the test tape on any measuring instrument.
3. Do not put the test tape near a place where the eraser is used.
4. Method of Demagnetization: – Turn the eraser power switch on at a remote position far away from the heads. Bring the eraser close to the heads, capstan and other parts to be demagnetized, and move it up and down four or five times to demagnetize. Slowly separate the eraser far away from the parts, and turn the power switch off.
5. Do not use any magnetize it from time to time in the course of each adjustment.
6. Do not turn semi-fixed resistor more than needed.
7. Do not apply locking bone excessively.

ADJUSTMENT POINT (COMPONENT SIDE)

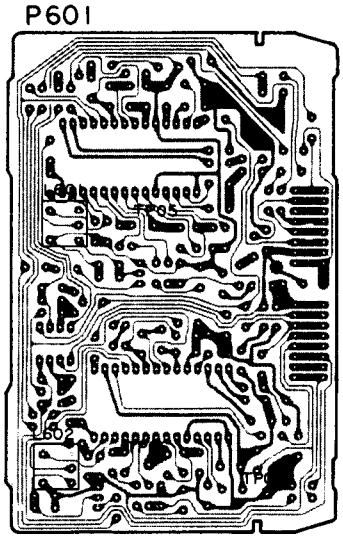
PU03



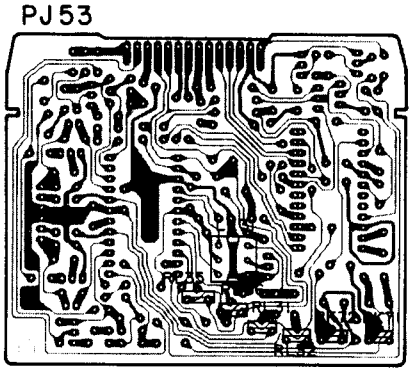
PJ03



P601



PJ53



M5553

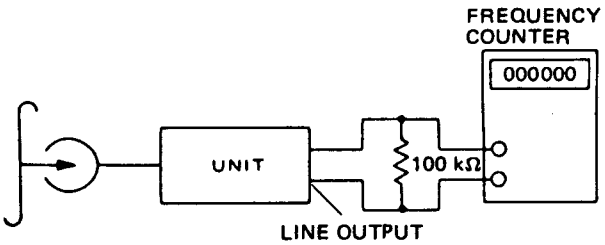
11.1 TAPE SPEED ADJUSTMENT

(TAPE 1)

1. Play back the middle section of the test tape TCW-211, and adjust the tape speed adjusting semi-fixed resistor (RM03) for 3000 to 3010 Hz frequency counter indication. (High speed mode: 9.5 cm/sec)
   Before above adjustment, short-circuit JM01.
2. Play back the middle section of the test tape TCC-111, and adjust the tape speed adjusting semi-fixed resistor (RM06) for 2990 to 3010 Hz counter indication. (Normal speed mode: 4.8 cm/sec)
3. To check that the adjustment is correctly performed, rewind the tape and play back again to confirm the counter values are within the allowable range.

(TAPE 2)

1. Play back the middle section of the test tape TCW-211, and adjust the tape speed adjusting semi-fixed resistor (RM13) for 2980 to 2990 Hz counter indication. (High speed mode: 9.5 cm/sec)
   At this time, short-circuit JM11 before adjustment.
2. Play back the middle section of the test tape TCC-111, and adjust the tape speed adjusting semi-fixed resistor (RM16) for 2990 to 3010 counter indication. (Normal speed mode: 4.8 cm/sec)
3. To check that the adjustment is performed correctly, rewind the test tape and play back again to confirm the counter reading value is within the allowable range.



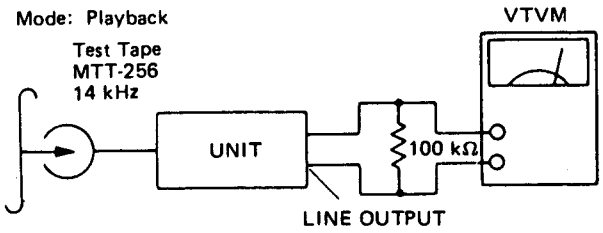
NOTES:

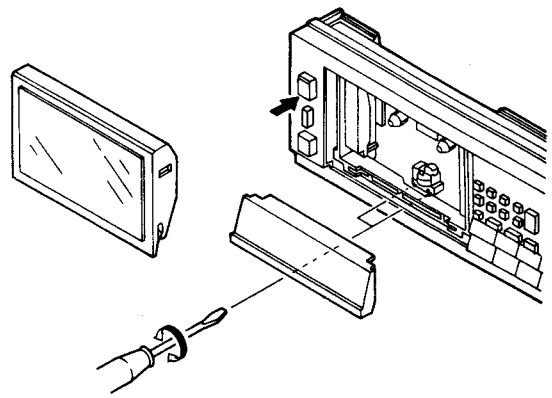
1. **Do not adjust after the unit is subjected to an excessive temperature change.**
2. **Be careful that the frequency counter may indicate an incorrect value because of too low of a counter input level.**
3. **Perform the above adjustments, after approx. 10 to 20 seconds.**
4. **When adjusting, be sure to perform the high-speed adjustment. To set the unit to high speed mode, short-circuit the pin of JY01? (JM01 for TAPE 1, JM11 for TAPE 2) from the normal playback mode.**

11.2 HEAD AZIMUTH ADJUSTMENT

1. Play back the 14 kHz signal of the test tape MTT-256, and rotate the head azimuth adjusting screw for a maximum VTVM reading.
2. If the peak level reads of the right and left channels are different, set the lower channel to maximum.
3. After adjustment, be sure to lock the screws with bond.

NOTE:
Be sure to adjust with the same section on the same side of the tape of both TAPE 1 and TAPE 2.





11.3 PLAYBACK OUTPUT LEVEL ADJUSTMENT

1. Play back the test tape MTT-150, and adjust RJ47(L)/RJ48(R) for TAPE 1, RJ09(L)/RJ10(R) for TAPE 2, so that the pin voltage at the Dolby test point (TP5, 6) becomes 387.5 mV.
2. Rewind the tape and play back again to confirm that both levels are the same.

11.4 RECORDING/PLAYBACK LEVEL ADJUSTMENT

1. Load a normal tape.
2. Apply a signal with a frequency of 1 kHz and a voltage of 100 mV to the LINE INPUT and adjust the REC VOLUME so that the voltmeter reads 387.5 mV between the TP5 and TP6. Record and playback the tape in this condition and adjust the RK01 (L) and RK02 (R) to obtain the same level as the monitor level. With the chrome and metal tape, check to see if the level difference compared with the monitor level is within ±1 dB. Also, adjust the RK71 (L) and RK72 (R) for the TAPE 1 in the same manner.

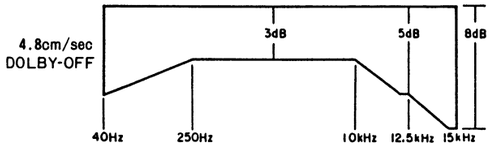
M5554.

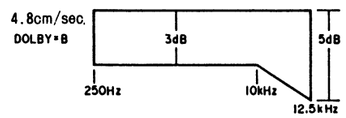
11.5 REC/PLAY FREQUENCY RESPONSE ADJUSTMENT AND MEASUREMENT

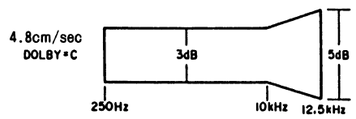
(NORMAL)

1. Load the AC-212 test tape and set the deck to the recording mode (input: 100 mV). Then reduce the level by 25 dB with the attenuator and record 1 kHz and 10 kHz on the non-recorded section. (DOLBY C position)
2. Rewind the tape and play it again, and adjust RL01 (L) and RL02 (R) so that the playback level differences of 1 kHz and 10 kHz is within 0 to ±1.0 dB.
3. After adjustment, record 1 kHz, 10 kHz and 12.5 kHz signals, and check that the playback level differences of these frequencies are as gives below.
4. Set the DOLBY switch to OFF, record 1 kHz and 12.5 kHz signals, and check that the playback level differences are as given below.
5. With the DOLBY switch OFF, check that the L/R channel balance for 10 kHz is less than 3 dB.
6. Also, adjust the RL31 and RL32 for the TAPE 1 in the same manner.

NOTE:
When 1 kHz level difference in DOLBY C mode is 1 dB or more compared to the monitor level, adjust RK01 (L) and RK02 (R) for the recording level adjustment previously, so that the level difference is within 1 dB.

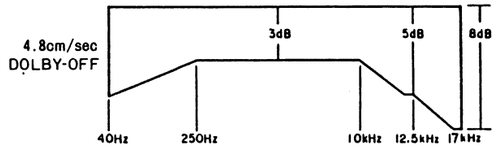


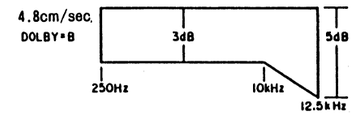


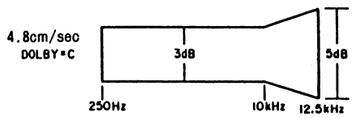


(CrO_2)

1. Load the AC-512 test tape and set the deck to the recording mode (input: 100 mV). Then reduce the level by 25 dB with the attenuator, and record 1 kHz and 10 kHz signals on the non-recorded section. (Dolby C position)
2. Rewind the tape and play it again, and adjust the Bias semi-fixed resistor RL05 so that the playback level differences of 1 kHz and 10 kHz is within 0 to ±1 dB.
3. After adjustment, record 1 kHz, 10 kHz and 12.5 kHz signals, and check that the playback level differences are as given below.
4. Set the Dolby switch to OFF, and record 1 kHz and 12.5 kHz signals, and check that the playback level differences are as given below.
5. With the Dolby switch OFF, check that the L/R channel balance for 10 kHz is less than 3 dB.
6. Also, adjust the RL35 for the TAPE 1 in the same manner.

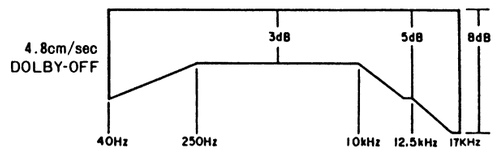


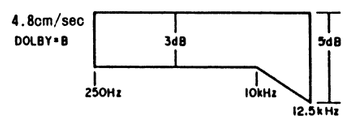


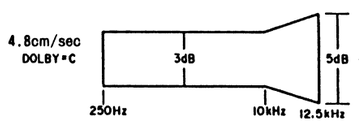


(METAL)

1. Load the AC-712 test tape and set the deck to the recording mode (input: 100 mV). Then reduce the level by 25 dB, and record 1 kHz and 10 kHz on the non-recorded section. (DOLBY C position)
2. Rewind the tape and play it, and adjust the BIAS semi-fixed resistor RL06 so that the 1 kHz and 10 kHz level difference is within 0 to ±1 dB.
3. After adjustment, record 1 kHz, 10 kHz and 12.5 kHz signals, and check the playback level differences are as given below.
4. Set the Dolby switch to OFF, and record 1 kHz and 10 kHz signals, and check that the playback level differences are as given below.
5. With the Dolby switch OFF, check that the L/R channel balance for 10 kHz is less than 3 dB.
6. Also, adjust the RL35 for the TAPE 1 in the same manner.





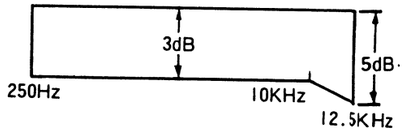


11.6 DUBBING REC/PLAY LEVEL MEASUREMENT

1. Load the MTT-150 test tape into TAPE 1 and AC-212 test tape into TAPE 2.
2. Set the deck to the dubbing recording mode of TAPE 1 to TAPE 2.
3. Rewind the AC-212 loaded into TAPE 2 and play back. Then measure it at DOLBY test points TP5 and TP6 to check that the playback output level becomes 387.5 mV ±1 dB.

11.7 DUBBING REC/PLAY FREQUENCY RESPONSE MEASUREMENT

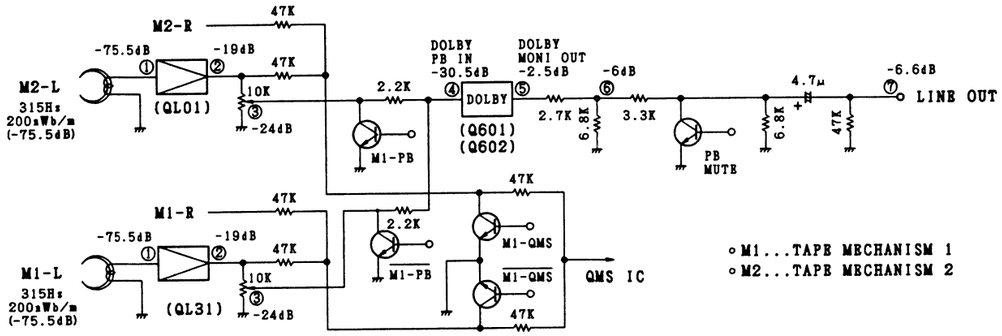
1. Load the MTT-256 test tape into TAPE 1 and AC-212 into TAPE 2.
2. Set the deck to the TAPE 1 to TAPE 2 dubbing recording mode.
3. Rewind the AC-212 loaded into TAPE 2 and play it back, and check that the level differences of 1 kHz and 12.5 kHz is as shown in the figure below.

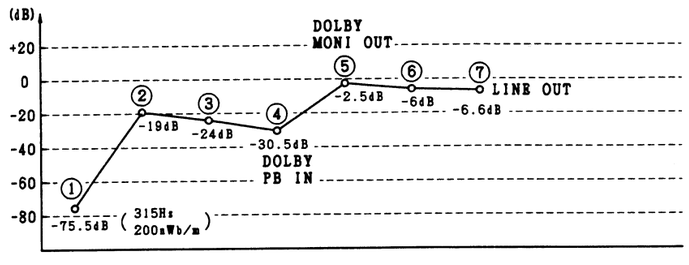


M5555

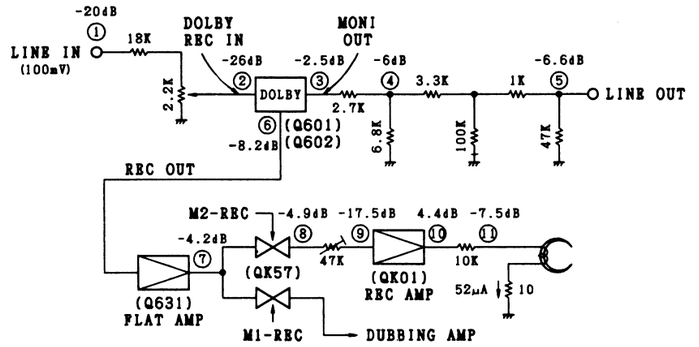
12. LEVEL DIAGRAM

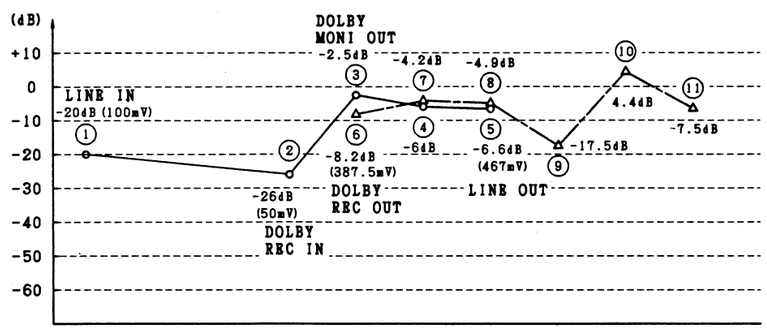
PLAYBACK LEVEL DIAGRAM





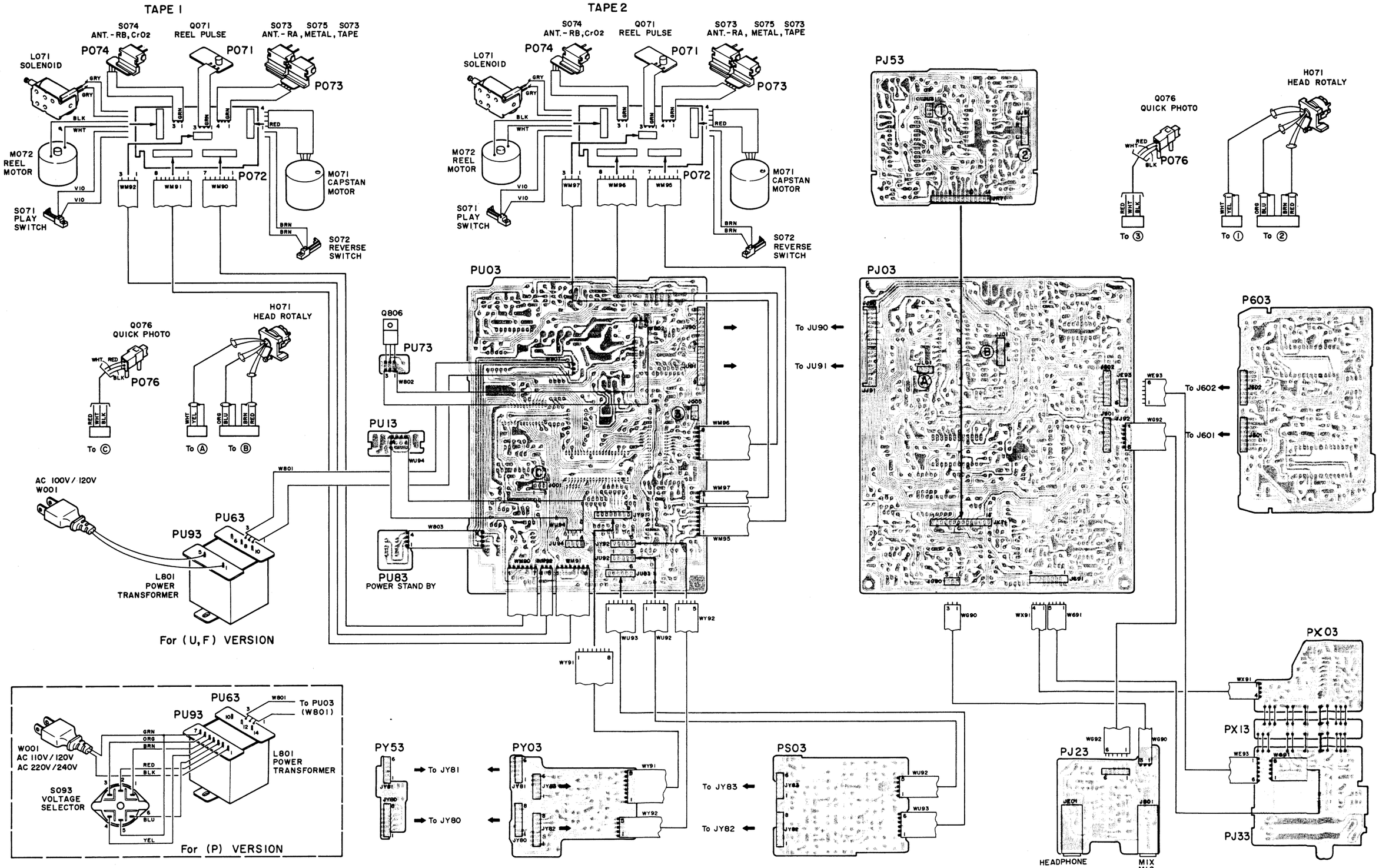
REC LEVEL DIAGRAM





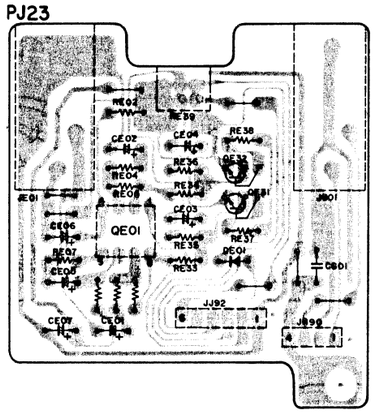
M5556

13. WIRING DIAGRAM (Component Side)

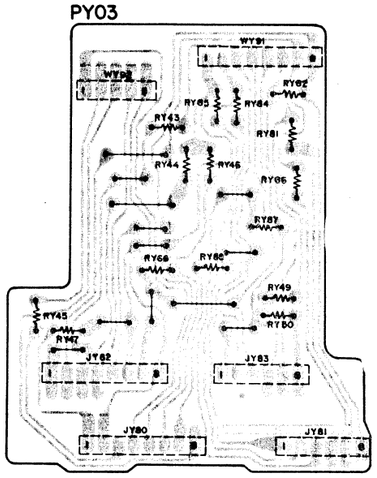


14. PARTS COMPONENT LOCATION (Pattern Side)

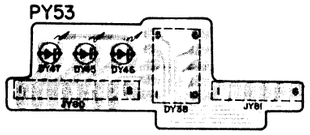
PJ23



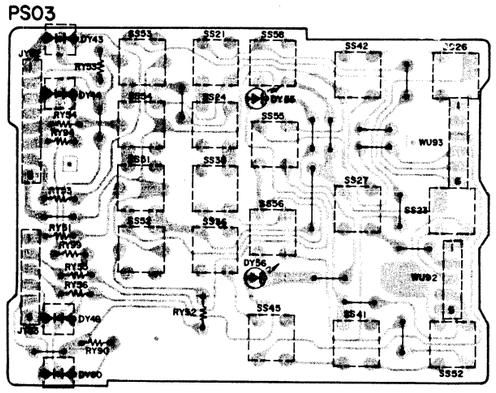
PY03



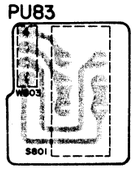
PY53



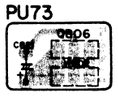
PS03



PU83

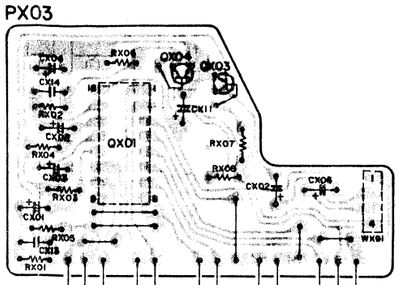


PU73

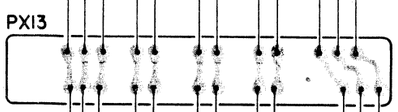


PU13

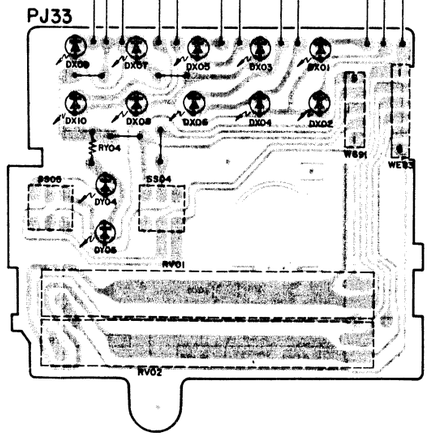
PX03



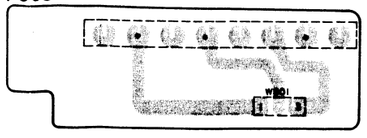
PX13



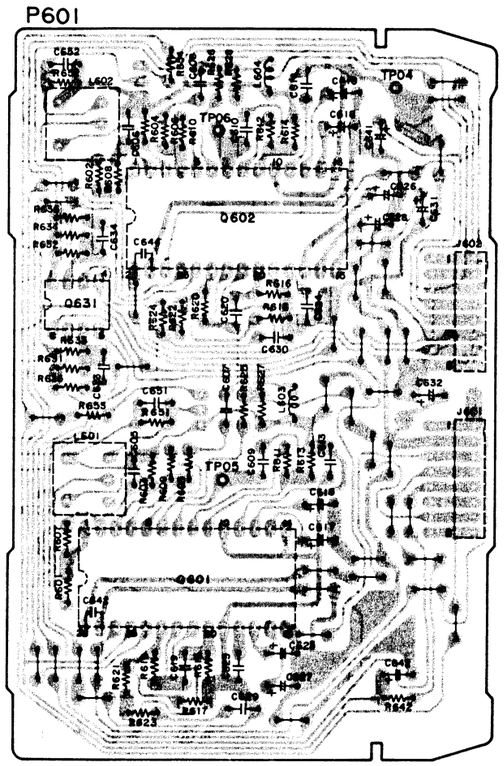
PJ33



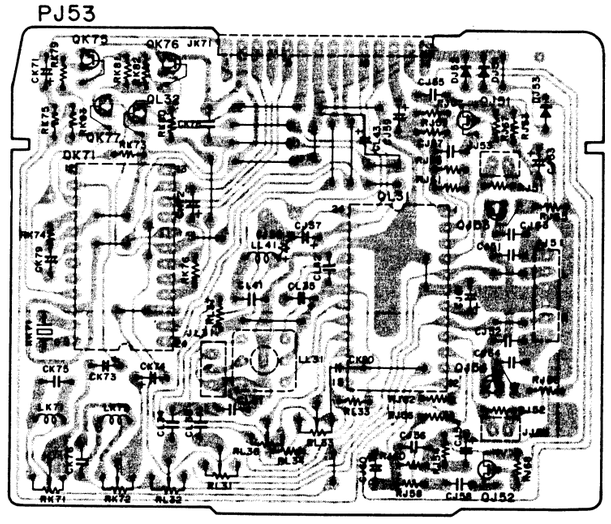
PU63



P601

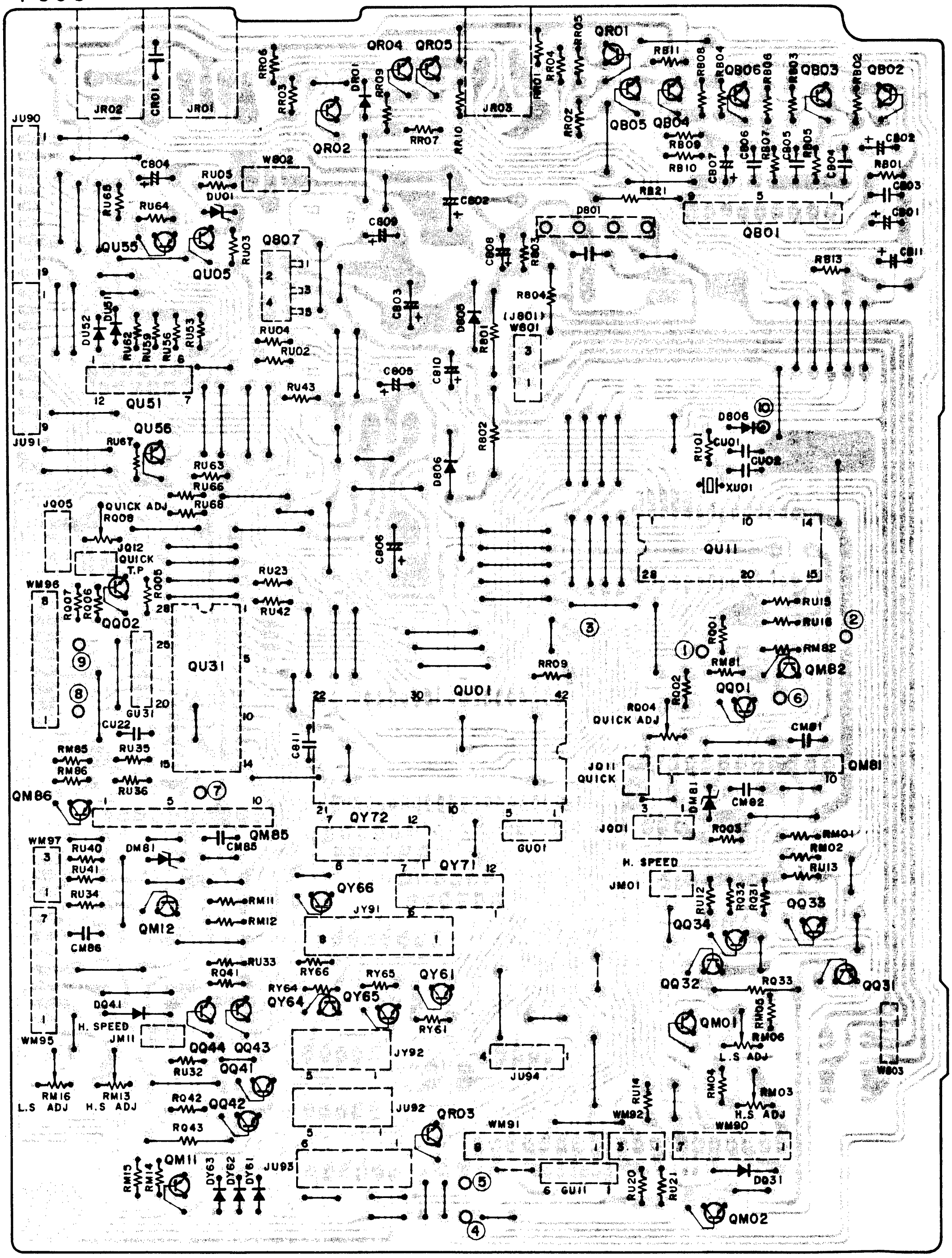


PJ53



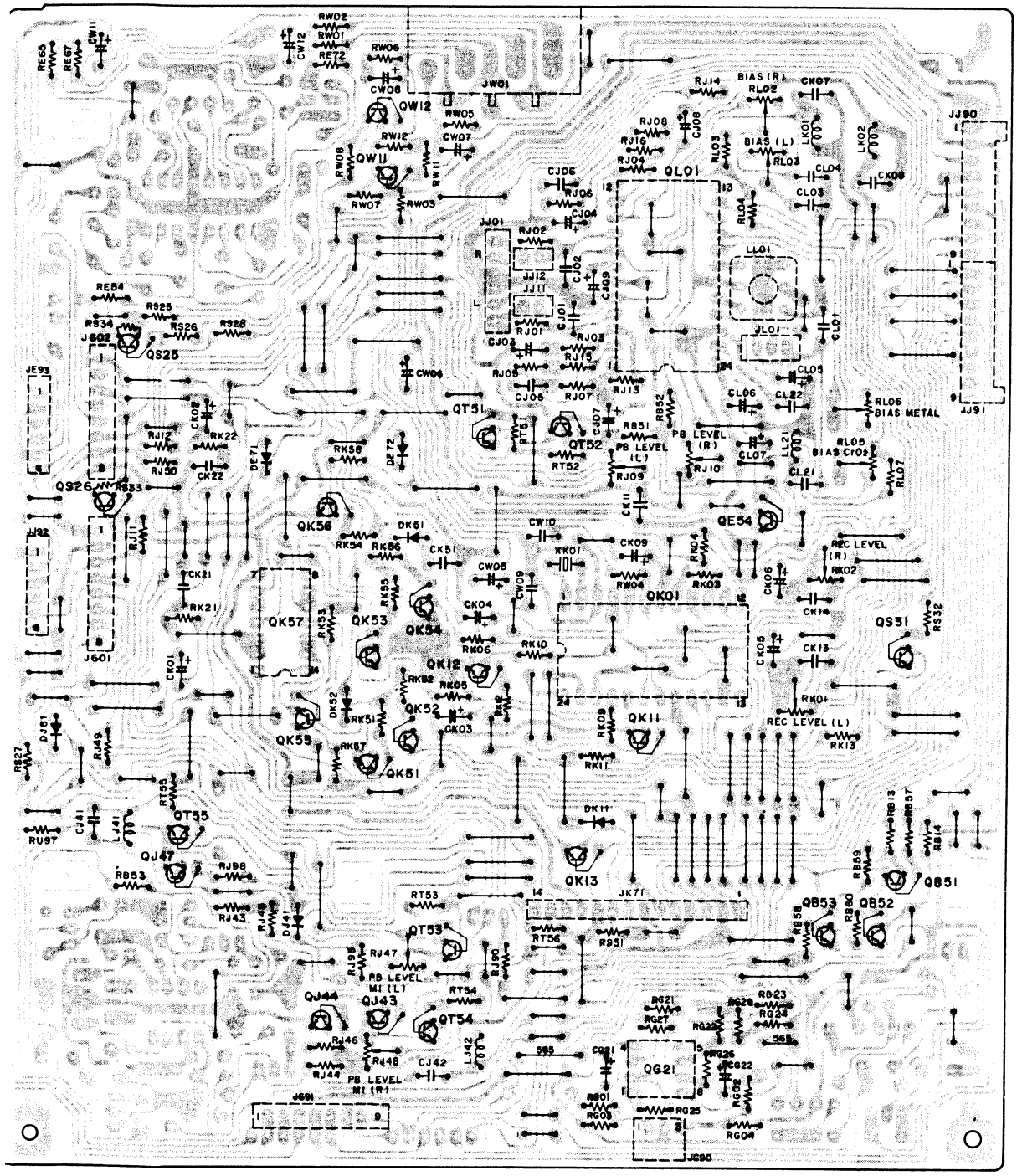
M5558

PU03


JR02
CR01
JR01
RR06
RR03
DR01
QR02
QR04
QR05
RR09
RR07
RR10
JR03
RR01
RR04
RR05
RR02
QR01
RB11
RB08
RB04
QB06
RB06
RB03
QB03
QB02
RB02
QB05
QB04
RB09
RB10
CB07
CB06
RB07
CB05
RB05
CB04
CB02
RB01
CB03
CB01
CB11
RB21
QB01
DB01
RB13
JU90
JU91
C804
RU65
RU64
RU05
DU01
W802
QU55
QU05
RU03
Q807
C802
C809
C808
R803
R804
(J801)
W801
C803
D805
R801
DU52
DU51
RU62
RU59
RU56
RU53
RU04
RU02
C805
C810
QU51
RU43
QU56
RU67
R802
D806
RU63
RU66
RU68
JQ05
QUICK ADJ
RQ08
JQ12
QUICK T.P
WM96
RQ07
RQ06
QQ02
RQ05
RU23
RU42
C806
QU31
GU31
CU22
RU35
RM85
RM86
RU36
QM86
QM85
CM85
C811
QU01
RR09
QU11
CU01
CU02
XU01
RU01
RU15
RU16
RQ01
RM82
RM81
QM82
RQ02
QQ01
RQ04
QUICK ADJ
CM81
QM81
JQ11
QUICK
DM81
CM82
JQ01
RQ03
QY72
GU01
QY71
WM97
RU40
RU41
RU34
CM86
DM81
QM12
RM11
RM12
QY66
JY91
H. SPEED
JM01
RM01
RM02
RU13
RU12
RQ32
RQ31
QQ33
QQ34
QQ32
RQ33
QQ31
RU33
RQ41
RY66
RY65
QY61
RY64
QY64
QY65
RY61
DQ41
H. SPEED
JM11
WM95
QQ44
QQ43
QQ41
RU32
JY92
JU94
QM01
RM05
RM06
L.S ADJ
W803
RM16
L.S ADJ
RM13
H.S ADJ
RQ42
QQ42
RQ43
JU92
QR03
RU14
WM92
RM04
RM03
H.S ADJ
WM91
WM90
QM11
RM15
RM14
DY63
DY62
DY61
JU93
GU11
RU20
RU21
DQ31
QM02

Mi5559

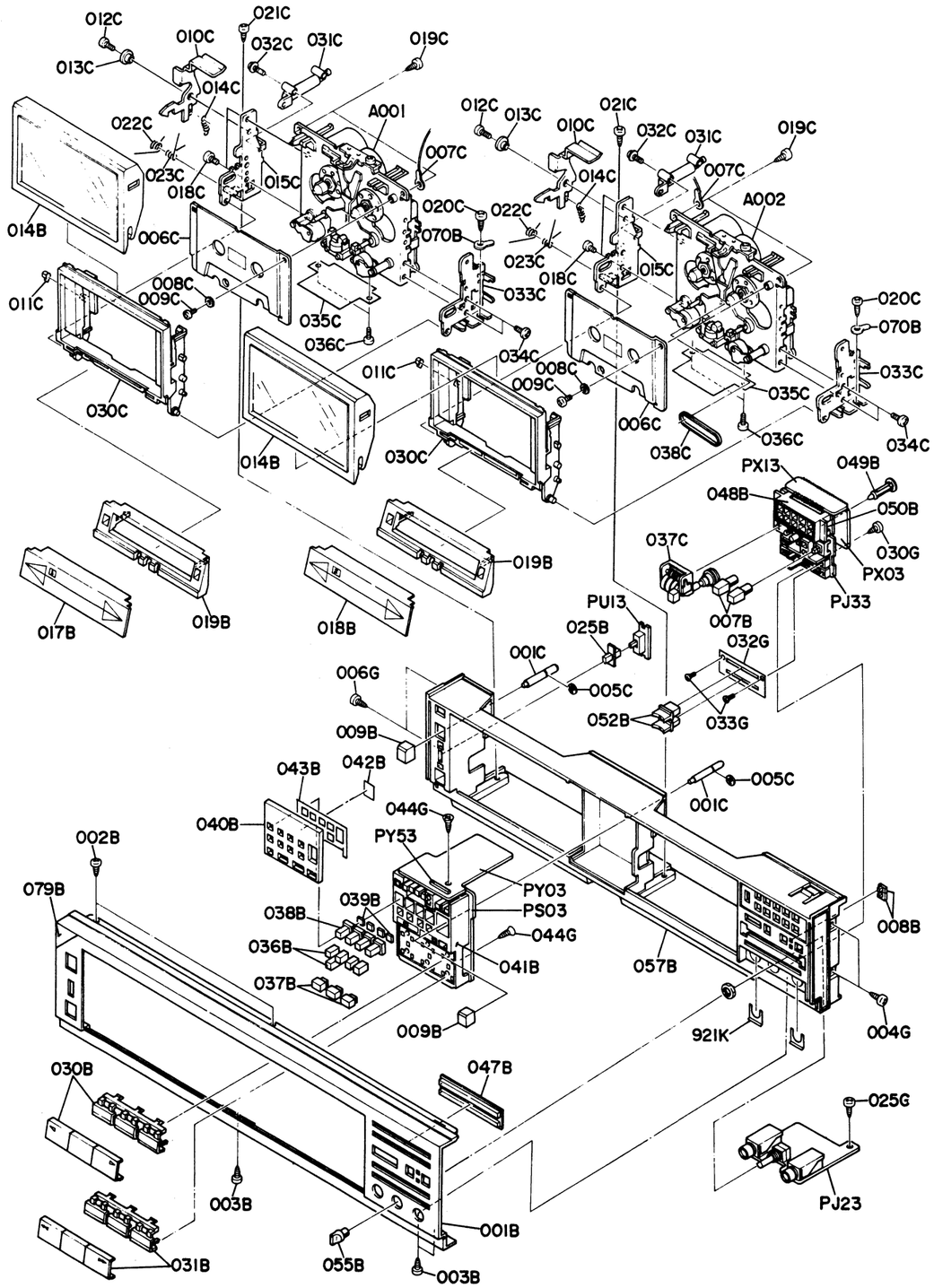
PJ03


QW12
QW11
QT51
QT52
QS25
QS26
QK56
QK57
QK53
QK54
QK12
QK52
QK55
QK51
QK01
QK11
QK13
QE54
QS31
QT55
QJ47
QJ44
QJ43
QT54
QT53
QB53
QB52
QB51
QG21
QLO1
JW01
JJ01
JJ11
JJ12
JJ90
JJ91
JK71
JG91
JG90
J602
J601
JE93
JE92
BIAS (R)
BIAS (L)
BIAS METAL
PB LEVEL (L)
PB LEVEL (R)
PB LEVEL MI (L)
PB LEVEL MI (R)
REC LEVEL (R)
REC LEVEL (L)

M5560

15. EXPLODED VIEWS AND PARTS LIST

[C01-99] FRONT PANEL AND ASSOCIATED MECHANISM FOR CASSETTE TAPE OPERATION



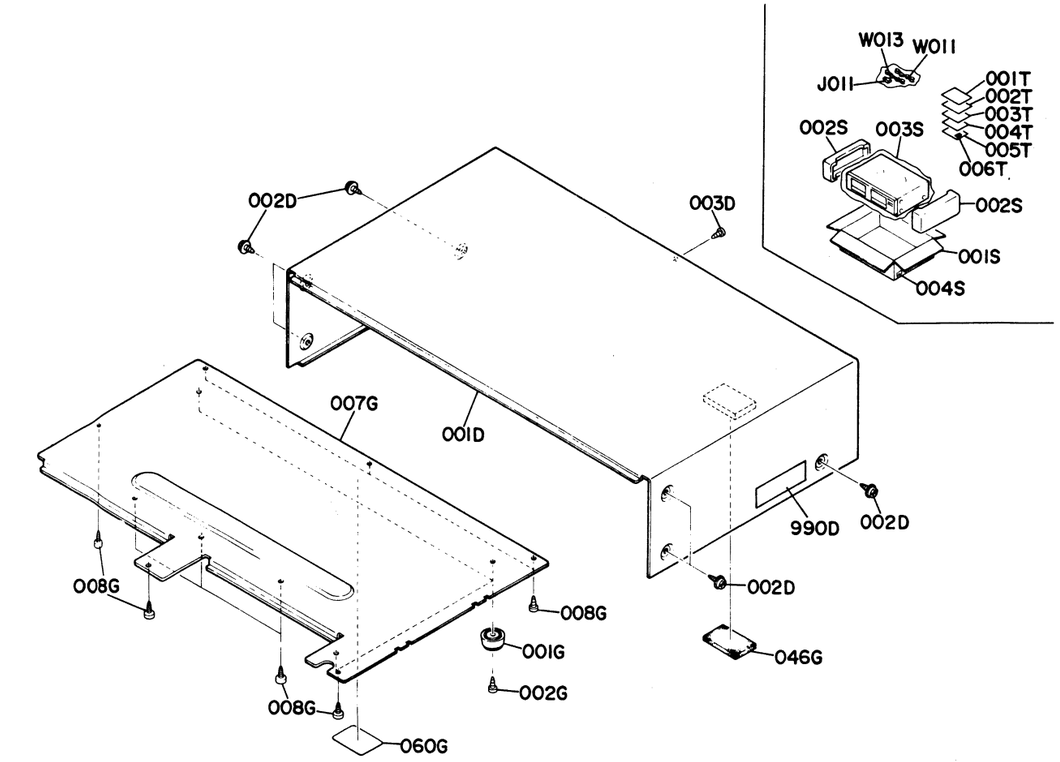
M3561

(U) : for U.S.A.
(P.G): for P.X.
(F) : for Japan

REF. DESIG.	PART NO.	DESCRIPTION	
001B	268T248110	Front Panel	
002B	51280308U0	B.H. Tapped Screw	B3 x 8
003B	51280308U0	B.H. Tapped Screw	B3 x 8
007B	268T270130	Button, Select	
008B	176T355020	Lens	
009B	268T270110	Button, Eject	
014B	268T063510	Escutcheon (K), Cassette Case	
017B	268T063110	Escutcheon, Cassette Case (A)	
018B	268T063310	Escutcheon, Cassette Case (B)	
019B	198T104010	Retainer, Case	
025B	268T154120	Knob, Timer	
030B	268T270120	Button, Play	
031B	268T270140	Button, FF	
036B	268T270150	Button	
037B	268T270160	Button	
038B	288H355010	Lens	
039B	288H259010	Bushing	
040B	268T063130	Escutcheon, Function	
041B	268T271020	Holder, Button	
042B	268T303010	Mask	
043B	268T122010	Adhesive	
047B	268T158010	Window, Rec Level	
048B	268T271010	Holder, Level LED	
049B	268T101040	Support	
050B	268T118020	Spacer	
052B	198T154120	Knob, Rec Level	
055B	135K154110	Knob, Mix Barance	
057B	268T105010	Chassis, Front	
070B	62031340W0	Lug	
079B	113T861010	Label, 2 Year [U]	
001C	198T254010	Pin, Eject	
005C	64000300R0	RG Ring, E Type	ϕ3
006C	198T063020	Escutcheon, Mecha	
007C	62031340W0	Lug	
008C	54050300R0	T.L. Washer, OR	
009C	51280310U0	B.H. Tapped Screw	B3 x 10
010C	269T258010	Hook, Case Rock	
011C	198T116020	Leaf Spring, Rock Gard	
012C	51570306B0	P. Taptite Screw	P3 x 6
013C	302T118050	Spacer	
014C	302T115130	Spring	
015C	198T160030	Bracket, Mecha (L)	
018C	51570304B0	P. Taptite Screw	P3 x 4
019C	51280308U0	B.H. Tapped Screw	B3 x 8
020C	51280308U0	B.H. Tapped Screw	B3 x 8
021C	51280308U0	B.H. Tapped Screw	B3 x 8
022C	198T115010	Spring, Door Open	
023C	198T115020	Spring, Cassette Open	
030C	302T162500	Door Assembly, Cassette	
031C	302T130010	Dumper Assembly	

REF. DESIG.	PART NO.	DESCRIPTION	
032C	302T010010	Screw	
033C	302T104010	Retainer, Mecha (R)	
034C	51570304B0	P. Taptite Screw	P3 x 4
035C	269T109010	Shield	
036C	51570304B0	P. Taptite Screw	P3 x 4
037C	268T052010	Counter, Tape	
038C	316Y264030	Belt, Counter	
004G	51280308U0	B.H. Tapped Screw	B3 x 8
006G	51280308U0	B.H. Tapped Screw	B3 x 8
025G	51280308U0	B.H. Tapped Screw	B3 x 8
030G	51280308U0	B.H. Tapped Screw	B3 x 8
032G	268T303020	Mask, Rec Volume	
033G	51040203S0	F.H.M. Screw	F2 x 3
044G	51500308B0	F.H. Taptite Screw	F3 x 8
921K	198T114010	Stopper, Headphone Jack	
A001	270T304500	Mechanism Assembly	
A002	270T304500	Mechanism Assembly	

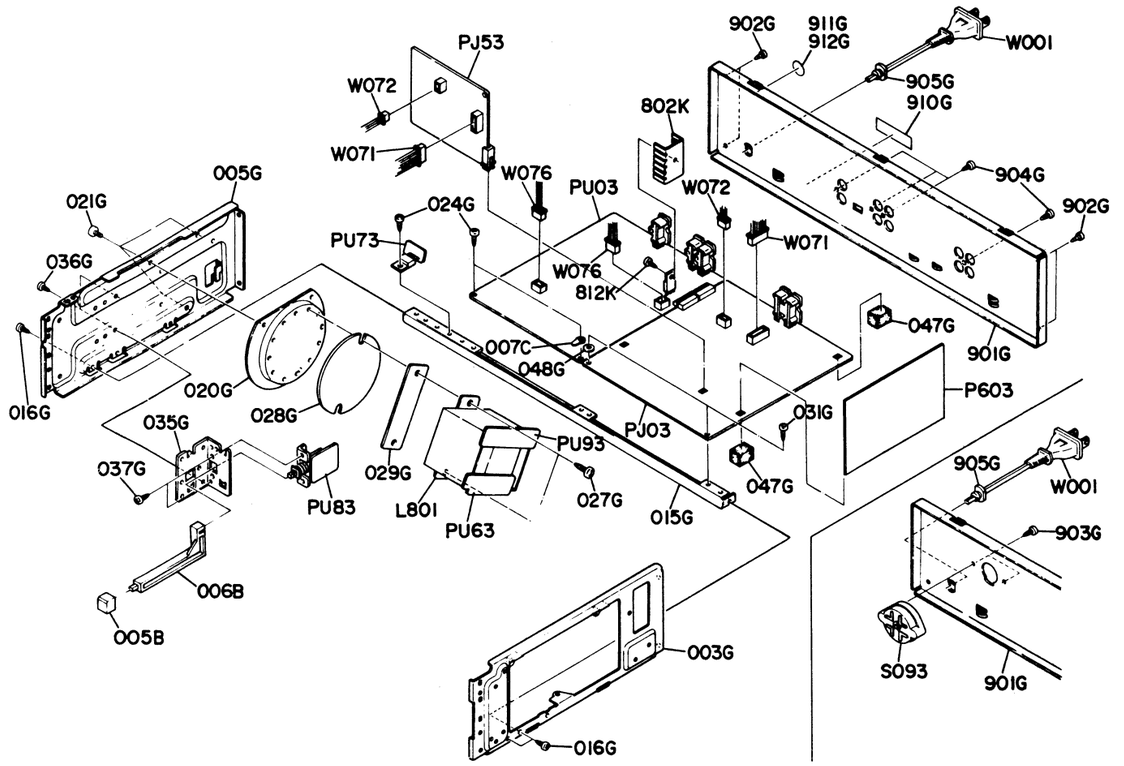
[C02-99] LID (TOP & BOTTOM COVER) AND PACKING MATERIALS



REF. DESIG.	PART NO.	DESCRIPTION	
001D	198T257320	Lid, Top Cover	
002D	51910408U0	Screw	M4 x 8
003D	51280308U0	B.H. Tapped Screw	B3 x 8
990D	117H861020	Label, Top Cover Side	
001G	011T057010	Leg	
002G	51280308U0	B.H. Tapped Screw	B3 x 8
007G	268T257010	Lid, Bottom Cover	
008G	51280308U0	B.H. Tapped Screw	B3 x 8
046G	202Z056020	Buffer	
060G	117H861020	Label, Caution [U]	
	2911861110	Label, Caution [P]	

REF. DESIG.	PART NO.	DESCRIPTION
		PACKING
001S	268T801020	Packing Case [U]
	268T801010	Packing Case [F]
	268T801030	Packing Case [P, G]
002S	198T809010	Cushion
003S	9090808030	Polyethylene Sheet
004S	9526019010	Serial No. Card [U]
	9526019050	Serial No. Card [P]
	9526019040	Serial No. Card [F]
001T	268T851210	User Manual [U, P]
	268T851110	User Manual [F]
002T	268T851220	User Manual, Spec [U]
	268T851320	User Manual, Spec [P]
003T	103H854010	Warranty Card [U]
	416H854010	Warranty Card [P]
	9631000130	Warranty Card [F]
004T	180T854010	Warranty Card [U]
	3435851210	User Manual [P]
	128T854010	Warranty Card [F]
005T	9611000050	User's Card [F]
006T	9540000010	License
⚠J011	YJ04001240	Jack, AC Adapter
W011	ZD01000170	Connective Cord, RCA
W013	ZD00400090	Connective Cord, Easy

[P01-99] REAR PANEL AND GENERAL PARTS

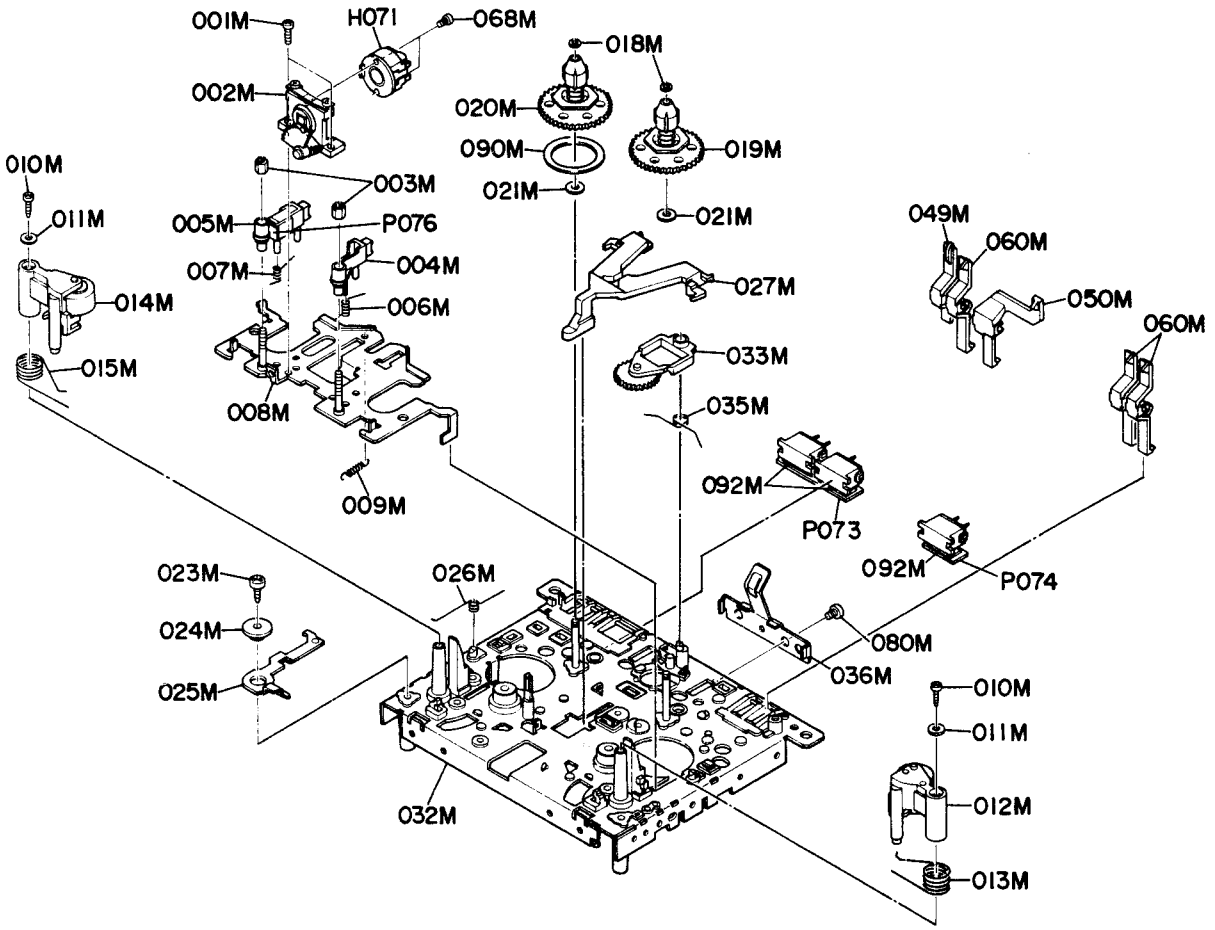


REF. DESIG.	PART NO.	DESCRIPTION	
005B	268T270110	Button, Power	
006B	128T121020	Link, Power Button	
007C	62031340W0	Lug	
003G	288H105020	Chassis, Side Panel (R)	
005G	288H105130	Chassis, Side Panel (L)	
015G	268T126010	Stay	
016G	51280308U0	B.H. Tapped Screw	B3 x 8
020G	268T160010	Bracket, Transformer	
021G	51280408B0	B.H. Tapped Screw	B4 x 8
024G	51280308U0	B.H. Tapped Screw	B3 x 8
027G	51280408B0	B.H. Tapped Screw	B4 x 8
028G	158T109010	Shield	
029G	158T005010	Clamper	
031G	51280308U0	B.H. Tapped Screw	B3 x 8
035G	268T160020	Bracket, Power Switch	
036G	51280308U0	B.H. Tapped Screw	B3 x 8
037G	51100304A0	B.H.M. Screw	B3 x 4
047G	103H056030	Buffer	
048G	54110149A0	Flat Washer, L.	

REF. DESIG.	PART NO.	DESCRIPTION	
901G	268T250020	Rear Panel	
	268T250030	Rear Panel	
	268T250040	Rear Panel	
902G	51280308U0	B.H. Tapped Screw	B3 x 8
903G	51280308U0	B.H. Tapped Screw	B3 x 8 [P]
904G	51280308U0	B.H. Tapped Screw	B3 x 8
905G	1455259090	Bushing, AC Power Cord [U]	
	1455259030	Bushing, AC Power Cord [P, F]	
910G	2112265110	Indicator, Serial No.	
911G	2457861040	Label, CSA	
912G	9511101070	Label, UL	
802K	202H267030	Heatsink	
812K	51280306B0	B.H. Tapped Screw	B3 x 6
⚠L801	TS15715170	Power Transformer	
	TS15722020	Power Transformer	
	TS15715160	Power Transformer	
⚠S093	BY05080050	Voltage Selector	
⚠W001	YC02000380	A.C. Power Cord [U]	
	YC01900080	A.C. Power Cord [F]	
W071	YB00301140	Connective Cord, 6P	
W072	YB00260200	Connective Cord, 3P	
W076	YB00250370	Connective Cord, 3P	

M556e

[P02-99] PARTS ASSEMBLED ON THE TOP OF CHASSIS

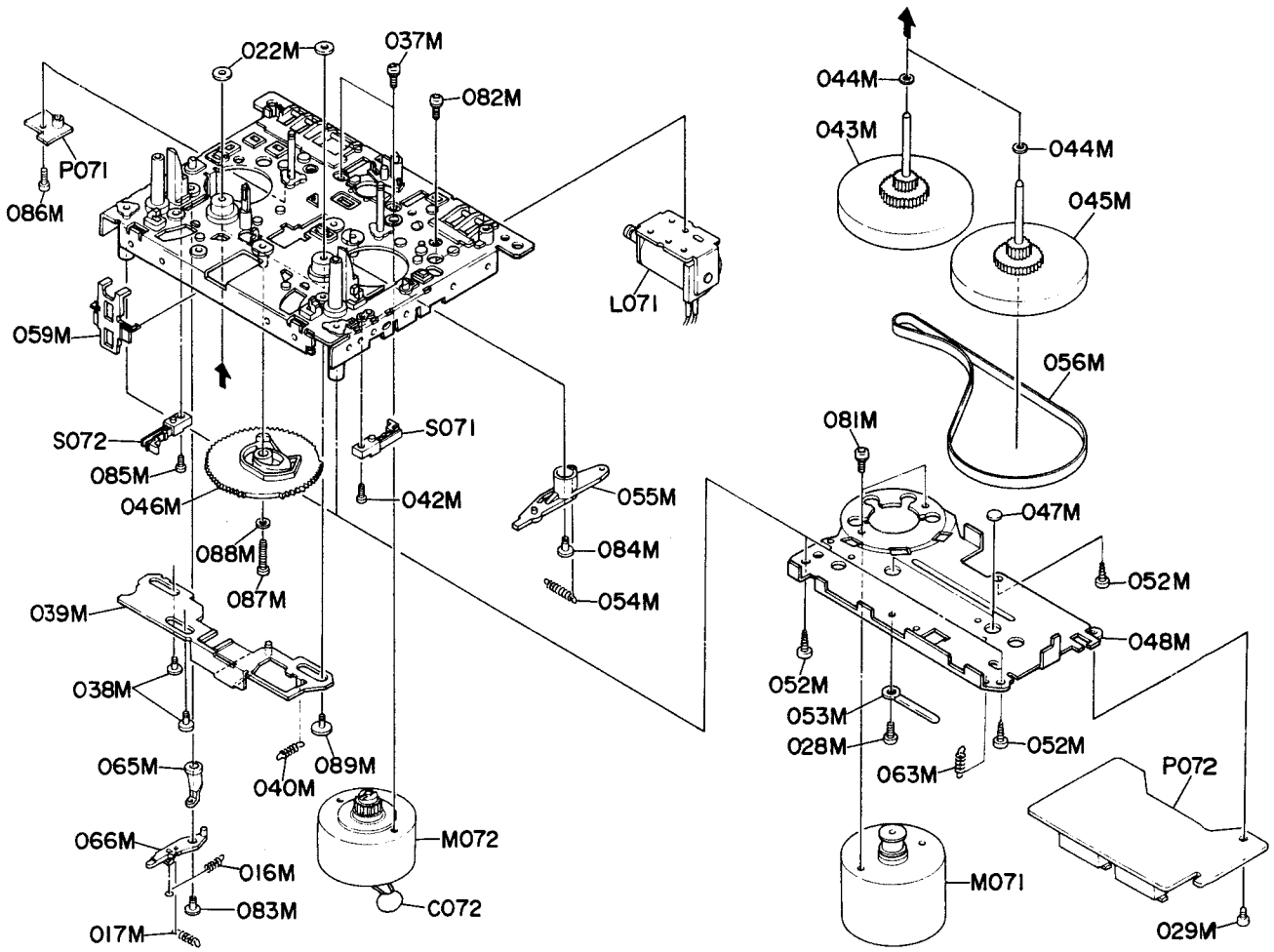


REF. DESIG.	PART NO.	DESCRIPTION
001M	51440205A0	L. Washer Screw L2 x 5
002M	302T160700	Bracket Assembly, Head
003M	302T011010	Nut, Tape Guide
004M	302T051010	Guide, Tape (R)
005M	302T051020	Guide, Tape (L)
006M	302T115010	Spring, Tape Guide (R)
007M	302T115020	Spring, Tape Guide (L)
008M	302T105700	Chassis, Head; S
009M	302T115030	Spring, Head Chassis
010M	51300213B0	P.H. Tapped Screw P2 x 13
011M	54020201A0	Flat Washer, P.
012M	302T255700	Pinch Roller, S (R)
013M	302T115040	Spring, Pinch Roller (R)
014M	302T255710	Pinch Roller, S (L)
015M	302T115050	Spring, Pinch Roller (L)
018M	302T118030	Spacer, Reel
019M	302T004700	Table S, Supply Reel
020M	302T004710	Table S, Take-Up Reel
021M	59020401G0	Washer, Reel Table
023M	51300308B0	P.H. Tapped Screw P3 x 8
024M	302T118010	Spacer, Eject Lock
025M	302T002010	Arm, Eject Lock
026M	302T115080	Spring, Eject Lock
027M	302T354010	Lever, Hold
032M	302T105710	Chassis S, Main
033M	302T001700	Idler S
035M	302T115090	Spring, Hold Lever
036M	302T116010	Leaf Spring, Cassette Hold

REF. DESIG.	PART NO.	DESCRIPTION
049M	302T354020	Lever, Pack
050M	302T354030	Lever, Metal
060M	302T354040	Lever, Anti Rec
068M	51821405A0	P.H.M. Screw P1.4 x 5
080M	51570304B0	P. Taptite Screw P3 x 4
090M	302T274010	Reflector, Sensor
092M	269T118210	Spacer, Push Switch
H071	LH52501010	Head, Rotary
P073	YF269T0230	P.W. Board, Cassette Switch
S073	SP01020120	Push Switch, Cassette
S075	SP01011020	Push Switch, Metal
P074	YF269T0240	P.W. Board, Anti Rec
S074	SP01020120	Push Switch, Anti Rec
P076	YF302T0020	P.W. Board, Quick Sensor
Q076	AW10002090	Photo Unit

M5563

[P03-99] PARTS ASSEMBLED ON THE REVERSE OF CHASSIS



REF. DESIG.	PART NO.	DESCRIPTION
016M	302T115060	Spring, Turn Gear
017M	302T115070	Spring, Trigger Arm
022M	302T118040	Spacer, Capstan
028M	51570304B0	P. Taptite Screw P3 x 4
029M	51570304B0	P. Taptite Screw P3 x 4
037M	51450263A0	F. Washer Screw F2.6 x 3
038M	302T114010	Stopper, Slide Board
039M	302T354050	Lever S, Slide Board
040M	302T115100	Spring, Slide Board
042M	51300206B0	P.H. Tapped Screw P2 x 6
043M	269T273710	Flywheel Assembly, (REV)
044M	59264702G0	Washer
045M	269T273700	Flywheel Assembly, (FWD)
046M	302T058010	Gear, Cam
047M	302T118020	Spacer, Flywheel Bracket
048M	302T160010	Bracket, Flywheel
052M	51302608B0	P.H. Tapped Screw P2.6 x 8
053M	4220005030	Clamper
054M	302T115110	Spring, Play Arm
055M	302T002700	Arm, Play
056M	302T264010	Belt, Main
059M	302T271020	Holder, Lead
063M	302T115120	Spring, Flywheel Bracket
065M	302T002020	Arm, Trigger (B)
066M	302T002030	Arm, Trigger (A)

REF. DESIG.	PART NO.	DESCRIPTION
081M	51450263A0	F. Washer Screw F2.6 x 3
082M	51450263A0	F. Washer Screw F2.6 x 3
083M	302T114010	Stopper, Trigger Arm
084M	302T114010	Stopper, Play Arm
085M	51300206B0	P.H. Tapped Screw P2 x 6
086M	51300206B0	P.H. Tapped Screw P2 x 6
087M	51300213B0	P.H. Tapped Screw P2 x 13
088M	54020201A0	Flat Washer, P.
089M	302T114020	Stopper, Slide Board
C072	DK18473310	Ceramic Cap. 0.047μF +80% −20%
L071	ME10350040	Solenoid Coil
M071	MM11209020	D.C. Motor, Main
M072	MM00609010	D.C. Motor, F/R
S071	SM01011310	Mini Switch, Play
S072	SM01011310	Mini Switch, Direction
P071	YF269T0210	P.W. Board, Photo Reflector
Q071	HW10001090	Photo Unit
P072	YF269T0220	P.W. Board, Connector
J071	YJ06002270	Jack, 8P
J072	YJ06002460	Jack, 7P
J073	YJ06002430	Jack, 3P

M5564

ASSIGNMENT OF COMMON PARTS CODES.

RESISTOR

R***: (1) GD05---140, Carbon film fixed resistor, ±5%, 1/4W
R***: (2) GD05---160, Carbon film fixed resistor, ±5%, 1/6W
① — Resistance value

Examples
① Resistance value

0.1Ω...001	10Ω...100	1kΩ...102	100kΩ...104
0.5Ω...005	18Ω...180	2.7kΩ...272	680kΩ...684
1Ω...010	100Ω...101	10kΩ...103	1MkΩ...105
6.8Ω...068	390Ω...391	22kΩ...223	4.7MkΩ...475

(Note) Please distinguish 1/4W from 1/6W by the shape of parts used actually.

C***: CERAMIC CAP.
(1) DD1---370, Ceramic condenser
Disc type
①② Temp. coeff. P350 ~ N1000, 50V
② — Capacity value
① — Tolerance

Examples
① Tolerance (Capacity deviation)
±0.25pF...0
±0.5pF...1
±5%...5
* Tolerance of COMMON PARTS handled here are as follows:
0.5pF ~ 5pF...±0.25pF
6pF ~ 10pF...±0.5pF
12pF ~ 560pF...±5%
② Capacity value

0.5pF...005	3pF...030	100pF...101
1pF...010	10pF...100	220pF...221
1.5pF...015	47pF...470	560pF...561

C***: CERAMIC CAP.
(1) DK16---300, High dielectric constant ceramic condenser
Disc type
① Temp. chara. 2B4, 50V
② — Capacity value

Example
② Capacity value

100pF...101	1000pF...102	10000pF...103
470pF...471	2200pF...222	

C***: ELECTROLY CAP. (⧺), FILM CAP. (⧻)
(1) EA------10, Electrolytic condenser
One-way lead type, Tolerance ±20%
①② Dielectric strength
① — Capacity value

Examples
① Capacity value

0.1μF...104	4.7μF...475	100μF...107
0.33μF...334	10μF...106	330μF...337
1μF...105	22μF...226	1100μF...108
		2200μF...228

② Working voltage

6.3V...006	25V...025	
10V...010	35V...035	
16V...016	50V...050	

(2) DF15---350, Plastic film condenser
One-way type, Mylar ±5% 50V
① — Capacity value

Examples
① Capacity value

0.001μF (1000pF)...102	0.1μF...104
0.0018μF.....182	0.56μF...564
0.01μF.....103	1μF...105
0.015μF.....153	

M5565

16. ELECTRICAL PARTS LIST

(U) : for U.S.A.
(P.G): for P.X.
(F) : for Japan

REF. DESIG.	PART NO.	DESCRIPTION
		PJ03-AUDIO CIRCUIT BOARD
PJ03	YG269T0010	P.W. Board, Audio
	ZZ268T0010	P.W. Board Assembly
		PJ03-CAPACITORS
CG23	DK18103310	Ceramic 0.01μF +80% −20%
CG24	DK18103310	Ceramic 0.01μF +80% −20%
CJ01	DF15681350	Film 680pF ±5%
CJ02	DF15681350	Film 680pF ±5%
CK11	DK18103310	Ceramic 0.01μF +80% −20%
CK51	DK18103310	Ceramic 0.01μF +80% −20%
CL01	DF15472550	Film 4700pF ±5%
CL03	DF15221550	Film 220pF ±5%
CL04	DF15221550	Film 220pF ±5%
CL21	DK18103310	Ceramic 0.01μF +80% −20%
CL22	DK18103310	Ceramic 0.01μF +80% −20%
CW01	DK18103300	Ceramic 0.01μF +80% −20%
		PJ03-RESISTORS
RJ09	RA01030750	10KΩ, Trimming; PB Gain (L)
RJ10	RA01030750	10KΩ, Trimming; PB Gain (R)
RJ47	RA01030750	10KΩ, Trimming; PB Gain (L)
RJ48	RA01030750	10KΩ, Trimming; PB Gain (R)
RK01	RA02230750	22KΩ, Trimming; Rec Level (L)
RK02	RA02230750	22KΩ, Trimming; Rec Level (R)
RL01	RA04730750	47KΩ, Trimming; Bias (L)
RL02	RA04730750	47KΩ, Trimming; Bias (R)
RL05	RA01030750	10KΩ, Trimming; Bias (L)
RL06	RA01030750	10KΩ, Trimming; Bias (R)
		PJ03-SEMICONDUCTORS
DE71	HD20002000	Diode 1SS133, etc.
DE72	HD20002000	Diode 1SS133, etc.
DJ41	HD20002000	Diode 1SS133, etc.
DJ61	HD20002000	Diode 1SS133, etc.
DK11	HD20002000	Diode 1SS133, etc.
DK51	HD20002000	Diode 1SS133, etc.
DK52	HD20002000	Diode 1SS133, etc.
QB51	HT30001000	Transistor 2SC536SP(F, G), etc.
QB52	HT30001000	Transistor 2SC536SP(F, G), etc.
QB53	HT30001000	Transistor 2SC536SP(F, G), etc.
QB54	HT30001000	Transistor 2SC536SP(F, G), etc.
QE21	HC10021090	IC NJM4560DD
QJ43	HT30001000	Transistor 2SC536SP(F, G), etc.
QJ44	HT30001000	Transistor 2SC536SP(F, G), etc.
QJ47	HT30001000	Transistor 2SC536SP(F, G), etc.
QK01	HC10005490	IC TDD1601
QK11	HT30001000	Transistor 2SC536SP(F, G), etc.
QK12	HT30001000	Transistor 2SC536SP(F, G), etc.
QK13	HT10001000	Transistor 2SA608SP(F, G), etc.
QK51 ~ QK56	HT30001000	Transistor 2SC536SP(F, G), etc.
QK57	HC406600B0	IC 4066
QL01	HC10004490	IC TDA1600
QS25	HT30001000	Transistor 2SC536SP(F, G), etc.
QS26	HT30001000	Transistor 2SC536SP(F, G), etc.
QT51 ~ QT55	HT30001000	Transistor 2SC536SP(F, G), etc.
QW11	HT30001000	Transistor 2SC536SP(F, G), etc.
QW12	HT30001000	Transistor 2SC536SP(F, G), etc.

REF. ESIG.	PART NO.	DESCRIPTION
		PJ03-MISCELLANEOUS
JE90	YJ06002450	Jack, 6P
JG90	YJ06002430	Jack, 3P
JJ01	YP06003420	Plug, 6P
JJ11	YP07001220	Plug, 2P
JJ12	YP07001220	Plug, 2P
JJ90	YJ06003560	Jack, 9P
JJ91	YJ06003560	Jack, 9P
JJ92	YJ06002450	Jack, 6P
JL01	YJ06003330	Jack, 3P
JW01	YT02040610	Terminal, RCA Pin Jack
J691	YJ06002270	Jack, 8P
LJ41	LC24750700	Choke Coil 4.7mH
LJ42	LC24750700	Choke Coil 22mH
LK01	LC22260700	Choke Coil 22mH
LL01	TC10140320	OSC Transformer
LL21	LC22250610	Choke Coil 2.2mH
XK01	FQ05003010	Seramic Vibrator, CSB500E
		PJ23-MIX MIC AMP/VOLUME CIRCUIT BOARD
PJ23	YK268T1810	P.W. Board, Mix Mic Amp/Volume
	ZZ268T1810	P.W. Board Assembly
RE39	RM05031280	Variable Resistor 50KΩx2
DF01	HD20002000	Diode 1SS133, etc.
QE01	HC10008090	IC NJM4558DD
QE31	HT30001000	Transistor 2SC536SP(F, G), etc.
QE32	HT30001000	Transistor 2SC536SP(F, G), etc.
WG90	YU03160260	Jumper Lead, 3P
WJ92	YU06280260	Jumper Lead, 6P
		PJ33-NR SWITCH/REC VOLUME CIRCUIT BOARD
PJ33	YK268T1820	P.W. Board, NR Switch/Rec Volume
	ZZ268T1820	P.W. Board Assembly
CG01	DK18103310	Ceramic Cap. 0.01μF +80% −20%
RV01	RX05030230	Variable Resistor 50KΩ, Rec Level (L)
RV02	RX05030230	Variable Resistor 50KΩ, Rec Level (R)
DX01 ~ DX06	HI10038030	L.E.D. SLP981F
DX07 ~ DX10	HI10037030	L.E.D. SLP981C
DY04	HI10038030	L.E.D. SLP981F
DY05	HI10038030	L.E.D. SLP981F
IE01	YJ01002540	Jack, Mix Mic
IG01	YJ01002340	Jack, Headphone
SS04	SP02011480	Push Switch, Dolby ON/OFF
SS05	SP02011480	Push Switch, Dolby B/C
WE90	YU06280260	Jumper Lead, 6P
W691	YU05200260	Jumper Lead, 5P

REF. DESIG.	PART NO.	DESCRIPTION
		PJ53-W-REC CIRCUIT BOARD
PJ53	YK270T0410	P.W. Board, W-REC
	ZZ268T0410	P.W. Board Assembly
		PJ53-CAPACITORS
CK78	DK18103310	Ceramic 0.01μF +80% −20%
CK80	DK18103310	Ceramic 0.01μF +80% −20%
CL31	DF15472550	Film 4700pF ±5%
CL33	DF15221550	Film 220pF ±5%
CL34	DF15221550	Film 220pF ±5%
CL41	DK18103310	Ceramic 0.01μF +80% −20%
		PJ53-RESISTORS
RK71	RA02230760	22KΩ, Trimming
RK72	RA02230760	22KΩ, Trimming
RL31	RA04730760	47KΩ, Trimming
RL32	RA04730760	47KΩ, Trimming
RL35	RA01030760	10KΩ, Trimming
RL36	RA01030760	10KΩ, Trimming
		PJ53-SEMICONDUCTORS
DJ51	HD20002000	Diode 1SS133 etc.
DJ52	HD20002000	Diode 1SS133 etc.
DJ53	HD20002000	Diode 1SS133 etc.
QJ51	HF202462B0	F.E.T. 2SK246
QJ52	HF202462B0	F.E.T. 2SK246
QJ53	HT30001000	Transistor 2SC536SP(F, G) etc.
QJ54	HT30001000	Transistor 2SC536SP(F, G) etc.
QK71	HC10005490	IC TDD1601
QK75	HT30001000	Transistor 2SC536SP(F, G) etc.
QK76	HT30001000	Transistor 2SC536SP(F, G) etc.
QK77	HT10001000	Transistor 2SA608SP(F, G) etc.
QL31	HC10004490	IC TDA1600
QL32	HT30001000	Transistor 2SC536SP(F, G) etc.
		PJ53-MISCELLANEOUS
JJ51	YP06003420	Plug, 6P
JJ53	YP07001220	Plug, 2P
JJ54	YP07001220	Plug, 2P
JK71	YP07001740	Plug, 14P
JL31	YP06003300	Plug, 3P
JK79	156T101030	Support
JY80	YP07001980	Plug, 8P
JY81	YP07001960	Plug, 6P
LK71	LC22260700	Choke Coil, 22mH
LK72	LC22260700	Choke Coil, 22mH
LL31	TC10140320	OSC Transformer
LL41	LC22250610	Choke Coil, 2.2mH
XK71	FQ05003010	Seramic Vibrator, CSB500E

M5566

REF. DESIG.	PART NO.	DESCRIPTION
		PS03-KEY SWITCH/FUNCTION CIRCUIT BOARD
PS03	YK268T1840	P.W. Board, Key Switch/Function
	ZZ268T1840	P.W. Board Assembly
DY43	HI10045320	L.E.D. GL-9ND4
DY44	HI10045320	L.E.D. GL-9ND4
DY49	HT10045320	L.E.D. GL-9ND4
DY50	HI10045320	L.E.D. GL-9ND4
DY55	HI10034320	L.E.D. GL-9EG14
DY56	HI10034320	L.E.D. GL-9EG14
SS21	SP01010970	Push Switch, Rec
SS23	SP01010970	Push Switch, Pause
SS24	SP01010970	Push Switch, Rec Mute
SS25	SP01010970	Push Switch, FF
SS26	SP01010970	Push Switch, REW
SS27	SP01010970	Push Switch, Stop
SS36	SP01010970	Push Switch, Memory
SS38	SP01010970	Push Switch, QMS
SS41	SP01010970	Push Switch, FOR Play
SS42	SP01010970	Push Switch, REV Play
SS45	SP01010970	Push Switch, REV Mode
SS51	SP01010980	Push Switch, N-Speed Dubb.
SS52	SP01011160	Push Switch, H-Speed Dubb.
SS53	SP01010980	Push Switch, Continuous Play
SS54	SP01011160	Push Switch, Continuous Rec.
SS55	SP01010970	Push Switch, Mecha 1
SS56	SP01010970	Push Switch, Mecha 2
SS58	SP01010970	Push Switch, 1 + 2 Rec.
JY82	YP07001980	Plug, 8P
JY83	YP07001960	Plug, 6P
WU93	YU04240260	Jumper Lead, 4P
WU94	YU05240260	Jumper Lead, 5P
		PU03-LOGIC MAIN CIRCUIT BOARD
PU03	YK269T1610	P.W. Board, Logic
	ZZ268T1610	P.W. Board Assembly
		PU03-CAPACITORS
CB03	DK18223310	Ceramic 0.022μF +80% −20%
CB04	DK18223310	Ceramic 0.022μF +80% −20%
CB06	DK18223310	Ceramic 0.022μF +80% −20%
CM81	DK18103310	Ceramic 0.01μF +80% −20%
CM82	DK18103310	Ceramic 0.01μF +80% −20%
CM85	DK18103310	Ceramic 0.01μF +80% −20%
CM86	DK18103310	Ceramic 0.01μF +80% −20%
CR01	DK18103310	Ceramic 0.01μF +80% −20%
⚠C801	DK18103310	Ceramic 0.01μF +80% −20%
C811	DK18473310	Ceramic 0.047μF +80% −20%
		PU03-RESISTORS
RB21	GG05181120	180Ω ±5% ½W
RM03	RA04720750	4.7KΩ, Trimming
RM06	RA01030750	10KΩ, Trimming
RM13	RA04720750	4.7KΩ, Trimming
RM16	RA01030750	10KΩ, Trimming
RQ04	RA02220750	2.2KΩ, Trimming
RQ08	RA02220750	2.2KΩ, Trimming
RQ33	NK05180010	18Ω ±5% 1W, Metal

REF. DESIG.	PART NO.	DESCRIPTION
RQ43	NK05180010	18Ω ±5% 1W, Metal
⚠R801	NH05010120	1Ω ±5% ½W, Fusible
⚠R802	NH05010120	1Ω ±5% ½W, Fusible
⚠R805	NH05010120	1Ω ±5% ½W, Fusible
GU01	BW05103120	10KΩx4 ±5% ½W, Composite
GU11	BW05103130	10KΩx5 ±5% 1/3W, Composite
GU31	BW05103130	10KΩx5 ±5% 1/3W, Composite
		PU03-SEMICONDUCTORS
DM81	HD30471000	Zener RD4.7J 4.7V
DM85	HD30471000	Zener RD4.7J 4.7V
DQ31	HD20016210	Diode 1SR35-200A
DQ41	HD20016210	Diode 1SR35-200A
DR01	HD20002000	Diode 1SS133 etc.
DU01	HD30471000	Zener RD4.7J 4.7V
DU51	HD20002000	Diode 1SS133 etc.
DU52	HD20002000	Diode 1SS133 etc.
DY61	HD20002000	Diode 1SS133 etc.
DY62	HD20002000	Diode 1SS133 etc.
DY63	HD20002000	Diode 1SS133 etc.
⚠D801	HD20027080	Diode RB152 [U]
	HD20016210	Diode 1SR35-200A [F, P]
⚠D802	HD20016210	Diode 1SR35-200A [F, P]
⚠D803	HD20016210	Diode 1SR35-200A [F, P]
⚠D804	HD20016210	Diode 1SR35-200A [F, P]
⚠D805	HD20016210	Diode 1SR35-200A
⚠D806	HD20016210	Diode 1SR35-200A
D811	HD20002000	Diode 1SS133 etc.
QB01	HC10044210	IC BA335
QB02 ~ QB06	HT30001000	Transistor 2SC536SP(F, G) etc.
QM01	HT10001000	Transistor 2SA608SP(F, G) etc.
QM02	HT41379000	Transistor 2SD1379
QM11	HT10001000	Transistor 2SA608SP(F, G) etc.
QM12	HT41379000	Transistor 2SD1379
QM81	HC10025210	IC BA6109
QM82	HT10001000	Transistor 2SA608SP(F, G) etc.
QM85	HC10025210	IC BA6109
QM86	HT10001000	Transistor 2SA608SP(F, G) etc.
QQ01	HT30001000	Transistor 2SC536SP(F, G) etc.
QQ02	HT30001000	Transistor 2SC536SP(F, G) etc.
QQ31	HT320602B0	Transistor 2SC2060(Q, R)
QQ32	HT317412B0	Transistor 2SC1741(Q, R)
QQ33	HT30001000	Transistor 2SC536SP(F, G) etc.
QQ34	HT30001000	Transistor 2SC536SP(F, G) etc.
QQ41	HT320602B0	Transistor 2SC2060(Q, R)
QQ42	HT317412B0	Transistor 2SC1741(Q, R)
QQ43	HT30001000	Transistor 2SC536SP(F, G) etc.
QQ44	HT30001000	Transistor 2SC536SP(F, G) etc.
QR01 ~ QR05	HT30001000	Transistor 2SC536SP(F, G) etc.
QU01	HC10201030	IC LM6402G
QU05	HT10001000	Transistor 2SA608SP(F, G) etc.
QU11	HC10207030	IC LM6413E
QU31	HC10207030	IC LM6413E
QU51	HC10062210	IC DT5A124F
QU55	HT10001000	Transistor 2SA608SP(F, G) etc.
QU56	HT10001000	Transistor 2SA608SP(F, G) etc.

M5567

REF. DESIG.	PART NO.	DESCRIPTION
QY61	HT10001000	Transistor 2SA608SP(F, G) etc.
QY64	HT317412B0	Transistor 2SC1741(Q, R)
QY65	HT317412B0	Transistor 2SC1741(Q, R)
QY66	HT317412B0	Transistor 2SC1741(Q, R)
QY71	HC10062210	IC DT5A124E
QY72	HC10062210	IC DT5A124E
⚠Q807	HC10205030	IC L78MR05
		PU03-MISCELLANEOUS
JM01	YP07001220	Plug, 2P
JM11	YP07001220	Plug, 2P
JQ01	YP06003330	Plug, 3P
JQ05	YP06003330	Plug, 3P
JQ11	YP07001220	Plug, 2P
JQ12	YP07001220	Plug, 2P
JR01	YT02020550	Terminal, Easy
JR02	YT02020530	Terminal, Sync Rec
JR03	YT02020510	Terminal, Equivalent
JU90	YP06003500	Plug, 9P
JU91	YP06003500	Plug, 8P
JU92	YJ06002390	Jack, 5P
JU93	YJ06002440	Jack, 4P
JU94	YJ06002390	Jack, 5P
JY91	YJ06002270	Jack, 8P
JY92	YJ06002390	Jack, 5P
WM90	YU07140260	Jumper Lead, 7P
WM91	YU08140260	Jumper Lead, 8P
WM92	YU03140260	Jumper Lead, 3P
WM95	YU07220260	Jumper Lead, 7P
WM96	YU08240260	Jumper Lead, 8P
WM97	YU03200260	Jumper Lead, 3P
W801	YU03140260	Jumper Lead, 3P
W802	YU03280260	Jumper Lead, 3P
W803	YU04160260	Jumper Lead, 4P
XU01	FQ08003020	Seramic Vibrator, CSB800K
		PU13-TIMER SWITCH CIRCUIT BOARD
PU13	YK269T1630	P.W. Board, Timer Switch
	ZZ268T1630	P.W. Board Assembly
DU90	HD20002000	Diode 1SS133, etc.
SU10	SS02030370	Slide Switch, Timer R/P
WU92	YU05260260	Jumper Lead, 5P
		PU63-POWER TRANSF SECONDARY CIRCUIT BOARD
PU63	YK269T1640	P.W. Board, Power Transf. Secondary
	ZZ268T1640	P.W. Board Assembly
		PU73-REGULATOR CIRCUIT BOARD
PU73	YK269T1650	P.W. Board, Regulator
	ZZ268T1650	P.W. Board Assembly
⚠Q806	HC381515090	IC NJM78M15A

REF. DESIG.	PART NO.	DESCRIPTION
		PU83-POWER/STANDBY SWITCH CIRCUIT BOARD
PU83	YK269T1620	P.W. Board, Power Standby Switch
	ZZ268T1620	P.W. Board Assembly
⚠S801	SP02010960	Push Switch, Power
		PU93-POWER TRANSF COVER CIRCUIT BOARD
PU93	YK269T1660	P.W. Board, Power Transf. Cover
		PX03-LED METER DRIVE CIRCUIT BOARD
PX03	YK268T1850	P.W. Board, LED Meter Drive
	ZZ268T1850	P.W. Board Assembly
QX01	HC10006320	IC IR2E27A
QX03	HT30001000	Transistor 2SC536SP(F, G), etc.
QX04	HT30001000	Transistor 2SC536SP(F, G), etc.
WX91	YU03200260	Jumper Lead, 3P
		PX13-LED CONNECT CIRCUIT BOARD
PX13	YK268T1860	P.W. Board, LED Connect
	ZZ268T1860	P.W. Board Assembly
		PY03-FUNCTION LED CONNECT CIRCUIT BOARD
PY03	YK268H1870	P.W. Board, Function LED Connect
	ZZ268H1870	P.W. Board Assembly
WY91	YU08280260	Jumper Lead, 8P
WY92	YU05280260	Jumper Lead, 5P
		PY53-SEVEN SEGMENT LED CIRCUIT BOARD
PY53	YK268T1880	P.W. Board, Seven Segment LED
	ZZ268T1880	P.W. Board Assembly
DY38	HQ10101320	Display Unit
DY45	HI10034320	L.E.D. GL-9EG14
DY46	HI10034320	L.E.D. GL-9EG14
DY47	HI10034320	L.E.D. GL-9EG14

M55 68

REF. DESIG.	PART NO.	DESCRIPTION
		P603-DOLBY B/C NR. CIRCUIT BOARD
P603	YK269T0410	P.W. Board, Dolby B/C NR.
	ZZ268T0410	P.W. Board Assembly
		P603-CAPACITORS
C617	EA68405010	Elect 0.68μF 50V
C618	EA68405010	Elect 0.68μF 50V
C627	EA68405010	Elect 0.68μF 50V
C628	EA68405010	Elect 0.68μF 50V
		P603-SEMICONDUCTORS
Q601	HC10003490	IC TEA0665
Q602	HC10003490	IC TEA0665
Q631	HC10003090	IC 4558D
Q651	HT30001000	Transistor 2SC536SP(F, G), etc.
Q652	HT30001000	Transistor 2SC536SP(F, G), etc.
		P603-MISCELLANEOUS
J601	YP07001580	Plug, 8P
J602	YP07001580	Plug, 8P
L601	LS10440060	M.P.X. Coil, 19KHz
L602	LS10440060	M.P.X. Coil, 19KHz
L603	LC23660700	Choke Coil, 36mH
L604	LC23660700	Choke Coil, 36mH

(W01-99)	Assembly and Wiring
(T01-99)	Adjustment
(X01-00)	Correction

NOTE ON SAFETY:
SYMBOL ⚠ FIRE OR ELECTRICAL SHOCK HAZARD. ONLY ORIGINAL PARTS SHOULD BE USED TO REPLACE ANY PART MARKED WITH SYMBOL ⚠. ANY OTHER COMPONENT SUBSTITUTION (OTHER THAN ORIGINAL TYPE), MAY INCREASE RISK OF FIRE OR ELECTRICAL SHOCK HAZARD.

M556q

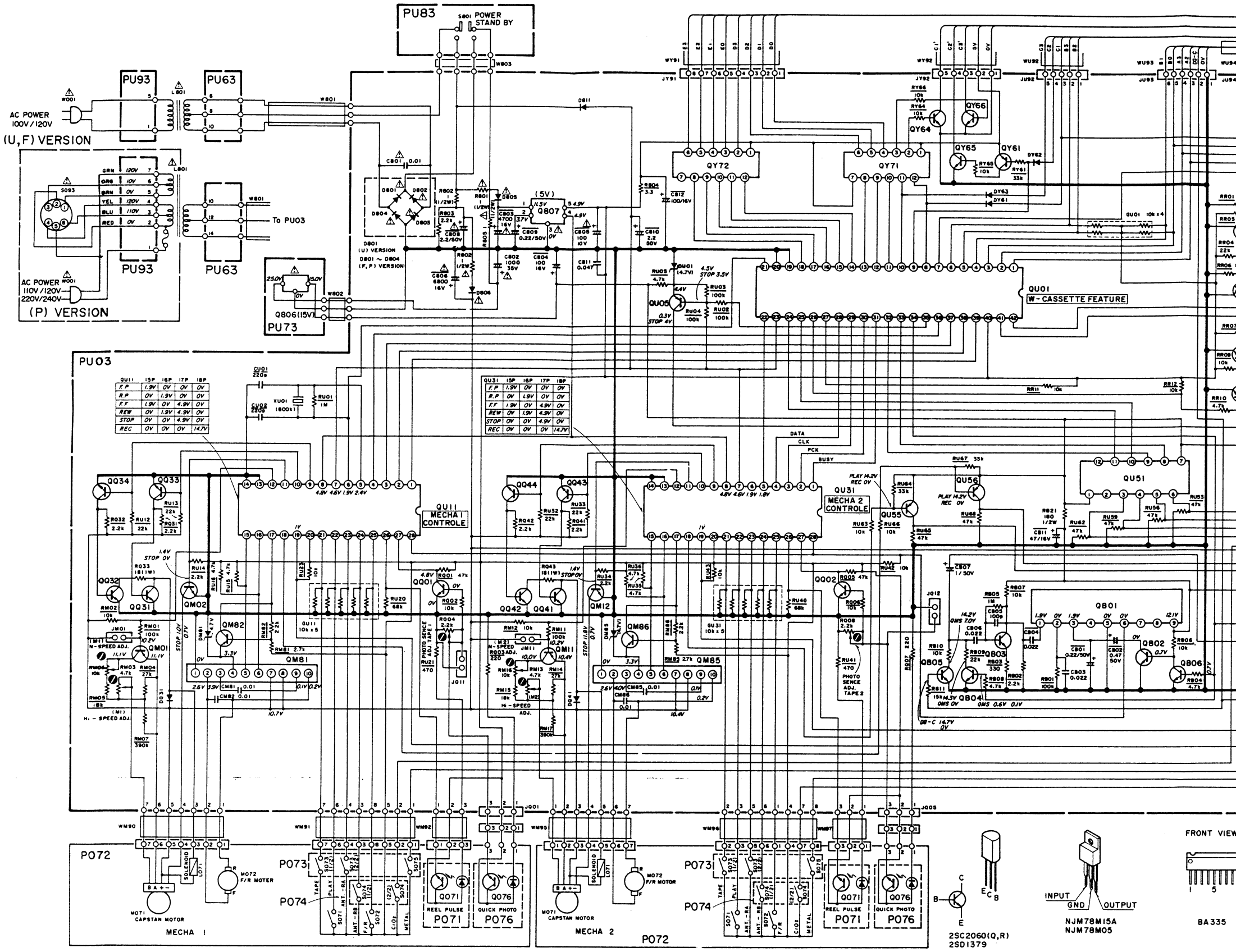
17. TECHNICAL SPECIFICATIONS

Type	Auto Reverse (2)
Tape Drive System	Single Capstan Drive
Cartridge	Philips type compact cassette
Track System	4-track 2-channel
Tape Speed	1-7/8 ips
Dubbing Speed	3-3/4 ips
Heads	2 Head System (2)
	Record/Playback: Super Hard Metal Alloy x 1
	Erase: Dual Gap Ferrite x 2
Wow and Flutter (WRMS, 1-7/8 ips)	0.05%
Frequency Response (Overall -25 dB below Dolby level ±3 dB):	
Normal Tape	35 Hz ~ 15.5 kHz
CrO_2 Tape	35 Hz ~ 16.5 kHz
Metal Tape	35 Hz ~ 17.5 kHz
Signal-to-Noise Ratio	
NR OFF	55 dB
With Dolby B NR	65 dB
With Dolby C NR	72 dB
Output Level/Impedance	
Line	500 mV/5 k ohms
Headphone	35 mV/10 ohms
Input Sensitivity/Impedance	
Line	70 mV/50 k ohms
Microphone	0.3 mV/10 k ohms
General	
Power Requirements	110/120/220/240 V AC, 50/60 Hz
Power Consumption	28W
Unit Dimensions and Weight	
Width	16-1/2" (420 mm)
Height	4" (100 mm)
Depth	10-1/4" (260 mm)
Weight	Unit Alone 11.9 lb. (5.4 kg)
	Packed for Shipment 13.6 lb. (6.2 kg)

Specifications subject to change without notice

M5570

18. SCHEMATIC DIAGRAM



"SERVICE INFORMATION IS FOR USE BY QUALIFIED RERSONNEL ONLY – ANY MISADJUSTMENT OR MISALIGNMENT MAY BE TREATED AS A NON-WARRANTY REPAIR BY ANY MARANTZ SERVICE CENTRE – "

Kind of Common Parts

RESISTOR

R*** (1) GD05 - - - 140, Carbon film fixed resistor, ±5% 1/4W
R*** (2) GD05 - - - 160, Carbon film fixed resistor, ±5% 1/6W

C*** : **CERAMIC CAP.**

(1) DD1 - - - - 370, Ceramic condenser, disc type (titan condenser) Temp. coeff. P350 ~ N1000 50V

C*** : **CERAMIC CAP.**

(1) DK16 - - - 300, High dielectric constant ceramic condenser, disc type (titan variable) Temp. chara. 2B4 50V

C*** : **ELECTROLY CAP. (⇌) / FILM CAP. (≒)**

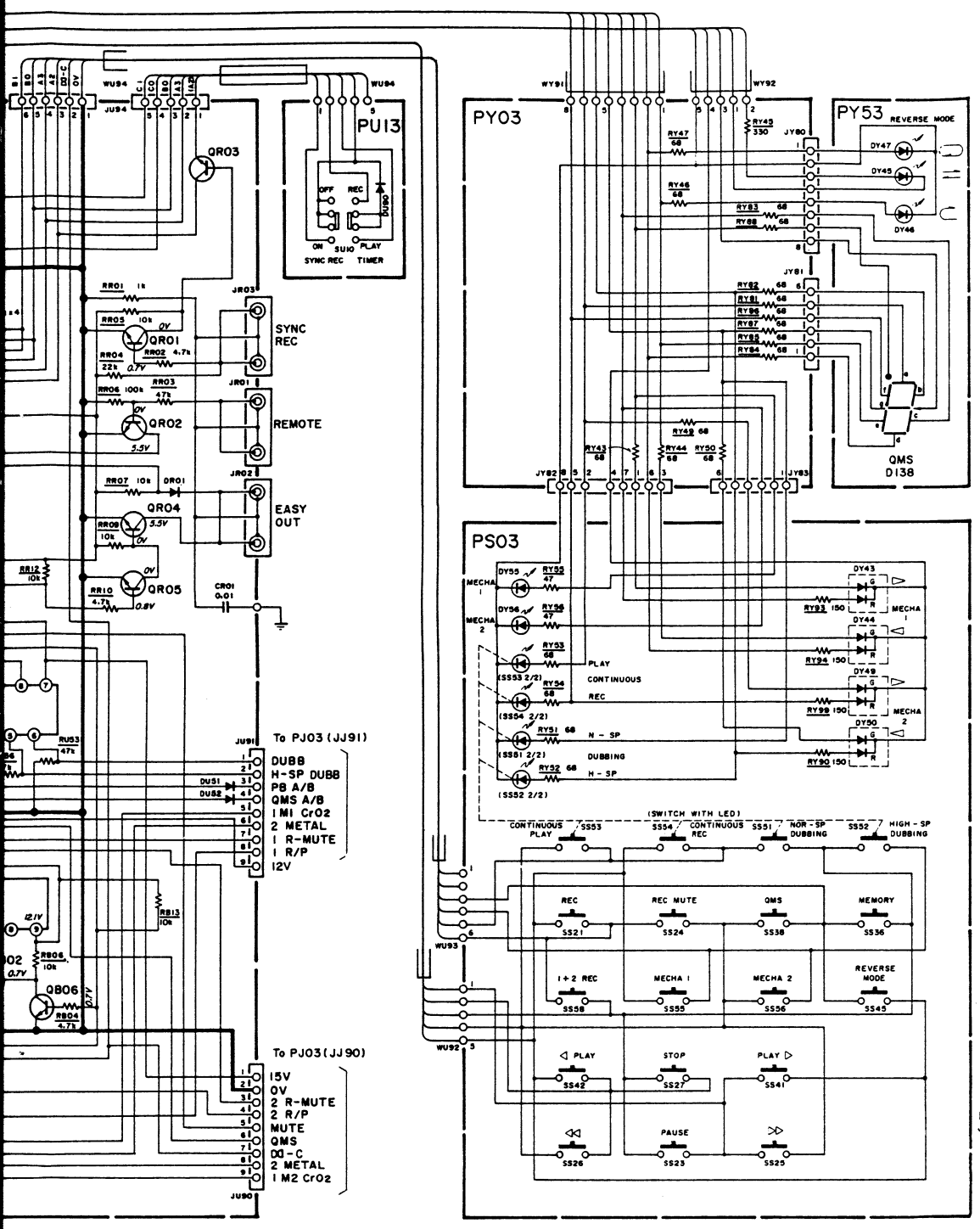
(1) EA - - - - - - 10, Electrolytic condenser, one-way lead type, tolerance ±20%
(2) DF15 - - - 350, Plastic film condenser, one-way type, Mylar, ±5% 50V

* In case of ordering the common parts, please establish the correct parts number of 10 figures by the procedure "ASSIGNMENT OF COMMON PARTS CODES"

M5571

Components and wiring are subject to change for modification without notice.

SD565



FRONT VIEW — 8A335

FRONT VIEW — DT5A124E

SIDE VIEW — 8A6109

TOP VIEW — LM6413E

TOP VIEW — LM6402G

(NPN) 2SC536SP, 2SC2458, 2SC3311A, 2SC1740S, 2SC1741(Q,R)

(PNP) 2SA608SP, 2SA1048, 2SA1309A, 2SA933S

TOP VIEW — IR2E27A

TOP VIEW — NJM4558DD

QM02,QM12
HT41379000
2SD1379

QY64 ~ QY66,QQ32,QQ42
HT31741281
2SC1741(Q,R)

QQ31,QQ41
HT32060280
2SC2060(Q,R)

QQ33,QQ34,QQ43,QQ44,QR02
QR03,QB02 ~ QB06,QR01
QR04,QR05,QQ01,QQ02
QX03,QX04,QE31,QE32
HT30001001
2SC536SP, 2SC2458
2SC3311A, 2SC1740S

QU05,QU55,QY61,QM01,QM11
QM82,QM86,QU56,QE99
HT10001001
2SA608SP, 2SA1048
2SA1309A, 2SA933S

QU01
HC10201030
LM6402G

QU31,QU11
HC10202030
LM6413E

QM81,QM85
HC10025210
BA6109

QY71,QY72,QU51
HC10062210
DT5A124E

Q806
HC38515090
NJM78M15A

Q807
HC10205030
L78M05

Q801
HC10044210
BA335

QX01
HC10006320
IR2E27A

QE01
HC10008090
NJM4558DD

D801 ~ D806,DQ31,DQ41
HD20016211
ISR35-200

D805,D811,DU51,DU52,DE99
DY61 ~ DY63,DR01,DU90
HD20002001
ISS133,ISS176,MA165

DM81,DM85,DU01
HD30471001
RD4.7,MTZJ4.7

D801 ~ D804
HD20027080
RB152

DY38
HQ10101320
GL-8E03D

DY43,DY44,DY49,DY50
HI10045320
GL-9ND4

DY45 ~ DY47,DY55,DY56
HI10034320
GL-9EG14

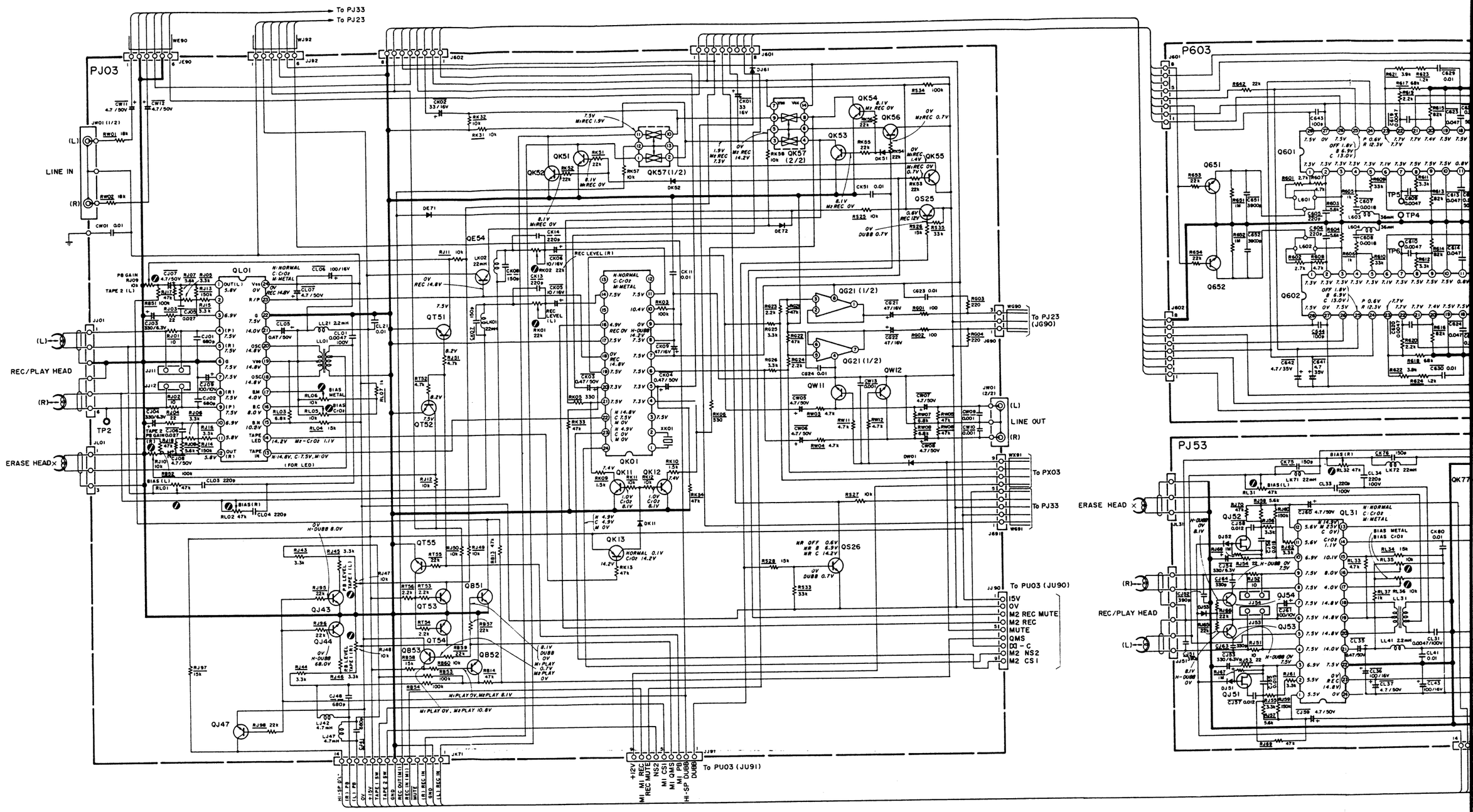
DX01 ~ DX06,DY05,DY06
HI10038030
SLP981C

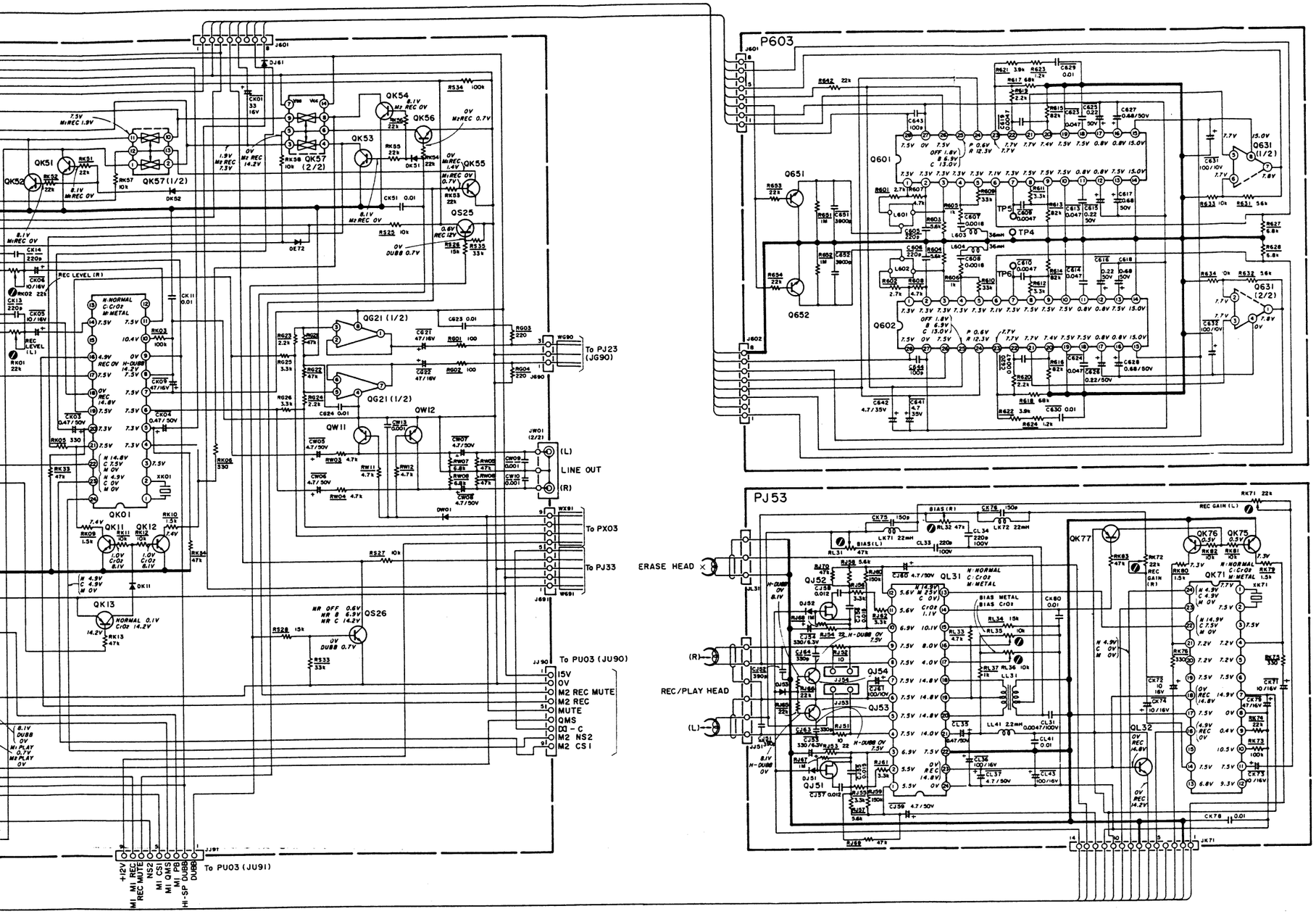
DX07 ~ DX10
HI10037030
SLP981C

RJ47	RA01030750	TRIMMING 10KΩ P.B. GAIN (L)
RJ48	RA01030750	TRIMMING 10KΩ P.B. GAIN (R)
RL01	RA04730750	TRIMMING 47KΩ BIAS (L)
RL02	RA04730750	TRIMMING 47KΩ BIAS (R)
RL05	RA01030750	TRIMMING 10KΩ BIAS CrO_2
RL06	RA01030750	TRIMMING 10KΩ BIAS METAL
RJ09	RA01030750	TRIMMING 10KΩ P.B. GAIN (L)
RJ10	RA01030750	TRIMMING 10KΩ P.B. GAIN (R)
RK01	RA02230750	TRIMMING 22KΩ REC LEVEL (L)
RK02	RA02230750	TRIMMING 22KΩ REC LEVEL (R)
RE39	RM05031280	VARIABLE 50KΩ MIX VOLUME
SS04	SP02011480	PUSH SWITCH DOLBY ON/OFF
SS05	SP02011480	PUSH SWITCH DOLBY B/C
RV01	RX05030230	VARIABLE 50KΩ REC LEVEL (L)
RV02	RX05030230	VARIABLE 50KΩ REC LEVEL (R)
RL31	RA04730760	TRIMMING 47KΩ BIAS (L)
RL32	RA04730760	TRIMMING 47KΩ BIAS (R)
RL35	RA01030760	TRIMMING 10KΩ BIAS CrO_2
RL36	RA01030760	TRIMMING 10KΩ BIAS METAL
RK71	RA02230760	TRIMMING 22KΩ REC LEVEL (L)
RK72	RA02230760	TRIMMING 22KΩ REC LEVEL (R)
SS21	SP01010970	PUSH SWITCH
SS23 ~ SS27	SP01010970	PUSH SWITCH
SS36	SP01010970	PUSH SWITCH
SS38	SP01010970	PUSH SWITCH
SS41	SP01010970	PUSH SWITCH
SS42	SP01010970	PUSH SWITCH
SS45	SP01010970	PUSH SWTICH
SS51 ~ SS56	SP01010970	PUSH SWITCH
SS58	SP01010970	PUSH SWITCH
RM03	RA04720750	TRIMMING 4.7KΩ HI SPEED (M1)
RM06	RA01030750	TRIMMING 10KΩ NORMAL SPEED (M1)
RM13	RA04720750	TRIMMING 4.7KΩ HI SPEED (M1)
RM16	RA01030750	TRIMMING 10KΩ NOMAL SPEED (M2)
RQ04	RA02220750	TRIMMING 2.2KΩ PHOT SENCE (M1)
RQ08	RA02220750	TRIMMING 2.2KΩ PHOT SENCE (M2)
DY38	HQ10101320	DISPLAY UNIT
L801	TS15722020	POWER TRANSF. [G.P.]
L801	TS15715170	POWER TRANSF. [U]
L801	TS15715150	POWER TRANSF. [N.A.]
L801	TS15722020	POWER TRANSF. [E]
H071	LH52501010	REC/P.B. ER HEAD
L071	ME10350040	SOLENOID COIL
M071	MM11209020	D.C. MOTOR
Q071	HW10001090	PHOTO UNIT
S071	SM01011310	MINI SWITCH PLAY
S072	SM01011310	MINI SWITCH DIRECTION
S073	SP01020120	PUSH SWITCH CASSETTE LEVER
S074	SP01030120	PUSH SWITCH REVS ANTI REC.
S075	SP01011020	PUSH SWITCH METAL LEVEL
012M	302T255700	PINCH ROLLER (R)
014M	302T255710	PINCH ROLLER (L)
019M	302T004400	TABLE SUPPLY
020M	302T004410	TABLE TAKE UP
056M	302T264010	BELT MAIN
H075	LH22851020	P.B. HEAD
L075	ME10350040	SOLENOID COIL
M072	MM00609010	D.C. MOTOR F/R
M075	MM11209020	D.C. MOTOR MAIN
Q076	HW10002090	PHOTO UNIT
S076	SM01011310	MINI SWITCH PLAY
S077	SM01011310	MINI SWITCH DIRECTION
S078	SP01020120	PUSH SWITCH CASSETTE LEVER

NOTE ON SAFETY :

Symbol ⚠ Fire or electrical shock hazard. Only original parts should be used to replace any part marked with symbol ⚠. Any other component substitution (other than original type), may increase risk of fire or electrical shock hazard.


To PJ33
To PJ23
PJ03
LINE IN
(L)
(R)
REC/PLAY HEAD
ERASE HEAD
TP2
QL01
QK01
QK11
QK12
QK13
QK51
QK52
QK53
QK54
QK55
QK56
QK57 (1/2)
QK57 (2/2)
QE54
QT51
QT52
QT53
QT54
QT55
QJ43
QJ44
QJ47
QJ51
QJ52
QJ53
QJ54
QB51
QB52
QB53
QS25
QS26
QW11
QW12
QG21 (1/2)
To PJ23 (JG90)
LINE OUT
To PX03
To PJ33
To PU03 (JU90)
I5V
OV
M2 REC MUTE
M2 REC
MUTE
QMS
D0 - C
M2 NS2
M2 CS1
To PU03 (JU91)
+12V
M1 REC MUTE
M1 NS2
M1 CS1
M1 QMS
M1 PB
HI-SP DUBB
DUBB
P603
Q601
Q602
Q651
Q652
TP4
TP5
TP6
PJ53
ERASE HEAD
REC/PLAY HEAD
QL31
QJ51
QJ52
QJ53
QJ54
QK77



QL01, QL31
HC10004490
TDA1600

QK01, QK71
HC10005490
TDD1601

0G21
HC10021090
NJM4560DD

QK57
HC40660080
4066

Q601, Q602
HC10003490
TEA0665

Q631
HC10003090
NJM4558D

QT51 ~ QT55
QJ43, QJ44, QJ47
QB51 ~ QB53
QE54, QK51 ~ QK56
QW11, QW12, QS25
QS26
QK01 ~ QK03
QJ53, QJ54, QK75, QK76
QL32, QE51, QE52
HT30001001
2SC536SP, 2SC3311A
2SC2458 , 2SC1740S

QK13, QK77
HT10001001
2SA608SP, 2SA1048
2SA1309A, 2SA933S

QJ45, QJ46, QJ51, QJ52
HF20246280
2SK246

DE51, DE52, DE71, DE72
DK11, DK51, DK52, DX01
DJ51 ~ DJ53, DJ61
HD20002001
1SS133, 1SS176, MA165

S G D
S
G
D
2SK246

TOP VIEW
1 28
14 15
TEA0665

TOP VIEW
1 16
8 9
4066

TOP VIEW
1 8
4 5
NJM4558D
NJM4560DD

NPN
C
B
E
2SC536SP
2SC3311A
2SC2458
2SC1740S

PNP
C
B
E
2SA608SP
2SA1048
2SA1309A
2SA933S

TOP VIEW
1 24
12 13
TDD1601
TDA1600

M5572